DES MOINES SOUTH POND/ DRAINAGE AREA SOURCE CONTROL OPERABLE UNIT (OPERABLE UNIT NO. 4) BUILDING SAMPLING, ANALYSES, AND ENGINEERING EVALUATION REPORT

Prepared for:

DICO INC.
200 Southwest 16th Street
Des Moines, Iowa 50305

Prepared by:

ECKENFELDER INC.

227 French Landing Drive
Nashville, Tennessee 37228
(615) 255-2288

1200 MacArthur Boulevard
Mahwah, New Jersey 07430
(201) 529-0800

August 1992

6836

Q:\6836\FECVR.DOC

ECKENFELDER INC.

August 3, 1992 6836

Mr. Glenn Curtis
Waste Management Division
USEPA Region 7
726 Minnesota Avenue
Kansas City, KS 66101

RE: Des Moines South Pond/Drainage Area Source Control Operable Unit Building Sampling, Analyses, and Engineering Evaluation Report

Dear Mr. Curtis:

Enclosed please find three copies of the report entitled, "Des Moines South Pond/Drainage Area Source Control Operable Unit (Operable Unit No. 4) Building Sampling, Analyses, and Engineering Evaluation." In preparing the report we have endeavored to take into account concerns raised by USEPA. A separate report has been prepared which addresses the former aldrin tank and surrounding soils and it is also being transmitted to you, under separate cover.

If you have any questions, do not hesitate to call.

Sincerely,

ECKENFELDER INC.

Margaret G Hunter

Margaret L. Hunter, P.E.
Project Manager

Jeffrey L. Pintenich, P.E., CHMM
Vice President
Director, Waste Management Division

cc: James Gerrity
Gary Schuster
John Strouf
Charles Lettow, Esq.
William Soukup

Q:\6836\L20729.DOC

227 French Landing Drive
Nashville, Tennessee 37228
615.255.2288
FAX 615.256.8332

DES MOINES SOUTH POND/DRAINAGE AREA
SOURCE CONTROL OPERABLE UNIT
(OPERABLE UNIT NO. 4)
BUILDING SAMPLING, ANALYSES, AND
ENGINEERING EVALUATION REPORT

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

This report presents the results of interior building sampling and analyses for pesticides and PCBs in Buildings 1 through 5 and the Maintenance Building. Buildings 3 and 4, and the Maintenance Building were initially sampled as part of the Supplemental Phase II Remedial Investigation (RI) conducted for the South Area Source Control (SASC) project (Operable Unit No. 2). This initial investigation indicated the presence of pesticides in dust and wipe samples within the buildings.

Additional investigations conducted by ECKENFELDER INC. for DICO Inc. in response to direction from USEPA indicated the presence of pesticides in all six buildings discussed above and the presence of PCBs in building materials in five of the six buildings. Currently, all six of the buildings are being included as part of the Des Moines South Pond/Drainage Area Source Control (Operable Unit No. 4) as directed by USEPA.

In addition to presenting the results of the interior building investigations, this report identifies and evaluates various alternatives which address pesticides in the buildings, and an alternative which addresses PCBs in building materials, also in response to direction from USEPA. The evaluations include cost estimates for the alternatives. Background information regarding the physical characteristics of the buildings has been included in the report so that logical and appropriate alternatives could be developed.

2.0 BUILDING HISTORY AND BACKGROUND

2.1 LOCATION/SETTING

The DICO, Inc. property encompasses approximately 43 acres and is located in the south-central portion of the City of Des Moines, Iowa (Figure 2-1). The facility borders the Raccoon River to the west, the Frank DePuydt woods to the south and other light industry to the north and east. The site is protected from 100-year floods of the Raccoon River by a levee and floodwall system. The entire area of light industry east of the Raccoon River (including the DICO facility) is constructed on fill materials which were used to raise the topography above the flood plain elevations.

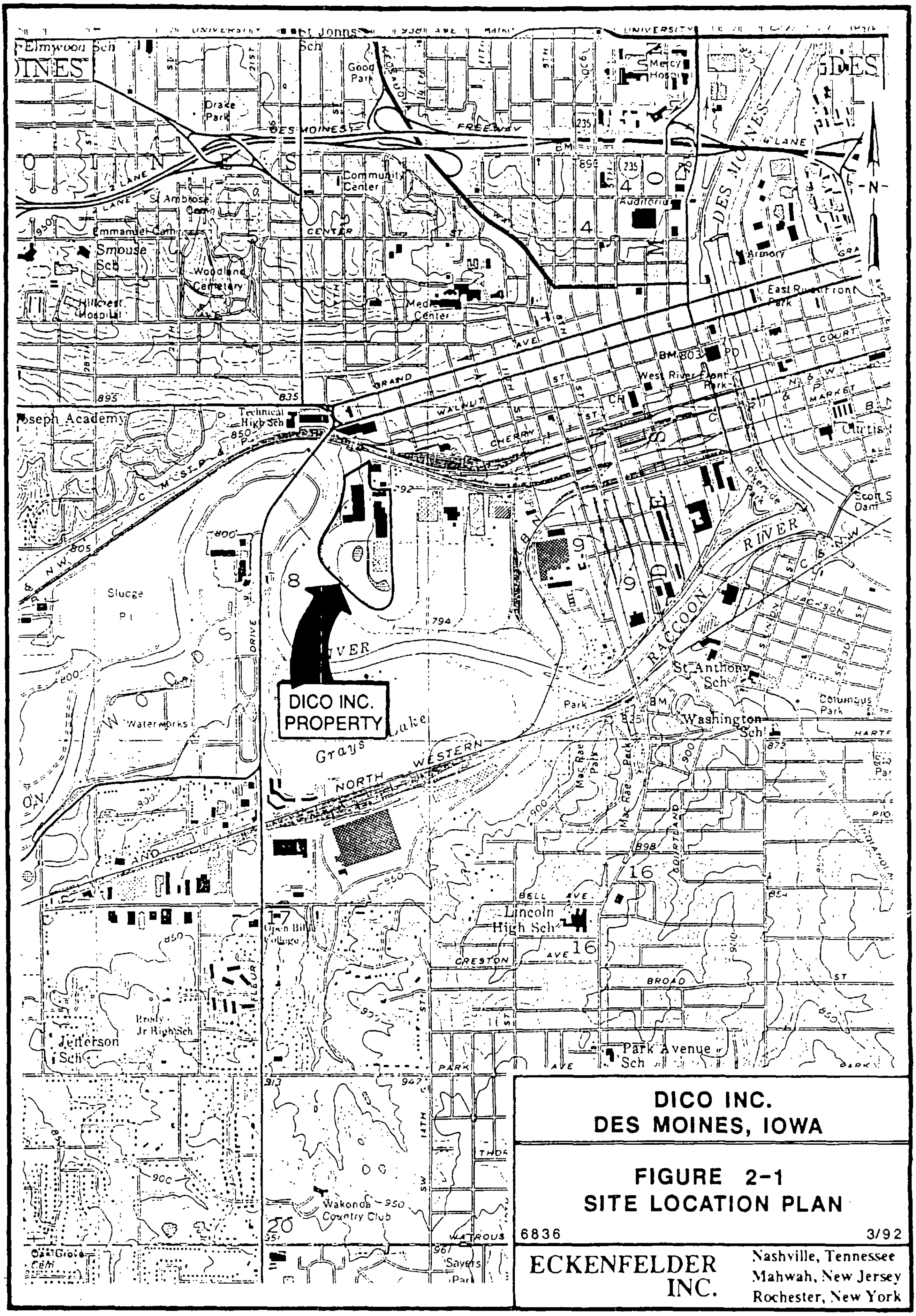
The DICO property is part of a larger area defined by USEPA as the "Des Moines TCE Site". This area was placed on the USEPA's National Priorities List (NPL) in 1983. The area includes the adjacent portion of the Des Moines Water Works property, the industrial area north of the Raccoon River (Meredith Corporation, Des Moines Tech/Central Campus, etc.), the Tuttle Street landfill to the east, and the Frank DePuydt woods to the south.

Within the Des Moines TCE Site is a smaller USEPA-defined area consisting of the DICO property and a portion of the Frank DePuydt woods which is the SASC Operable Unit. During the RI for the SASC site the South Pond/Drainage Area Source Control site was delineated which among other items encompasses Buildings 1 through 5, and the Maintenance Building. The boundaries of the DICO property and the operable units are illustrated in Figure 2-2.

2.2 BUILDING HISTORY

2.2.1 Construction History, Building Features, and Characteristics

Information regarding the building construction dates, dimensions, features, characteristics, and uses was developed based on interviews with DICO Inc. personnel, walk-throughs of the buildings in November and December 1991, existing reports, and an existing insurance drawing (Factory Mutual System) of the fire protection equipment at the DICO site. Building use and occupancy information was updated and presented in a letter sent to USEPA (Messrs. Curtis and Shiel)



DICO INC.
DES MOINES, IOWA

FIGURE 2-1
SITE LOCATION PLAN

6836 3/92

ECKENFELDER INC.

Nashville, Tennessee
Mahwah, New Jersey
Rochester, New York

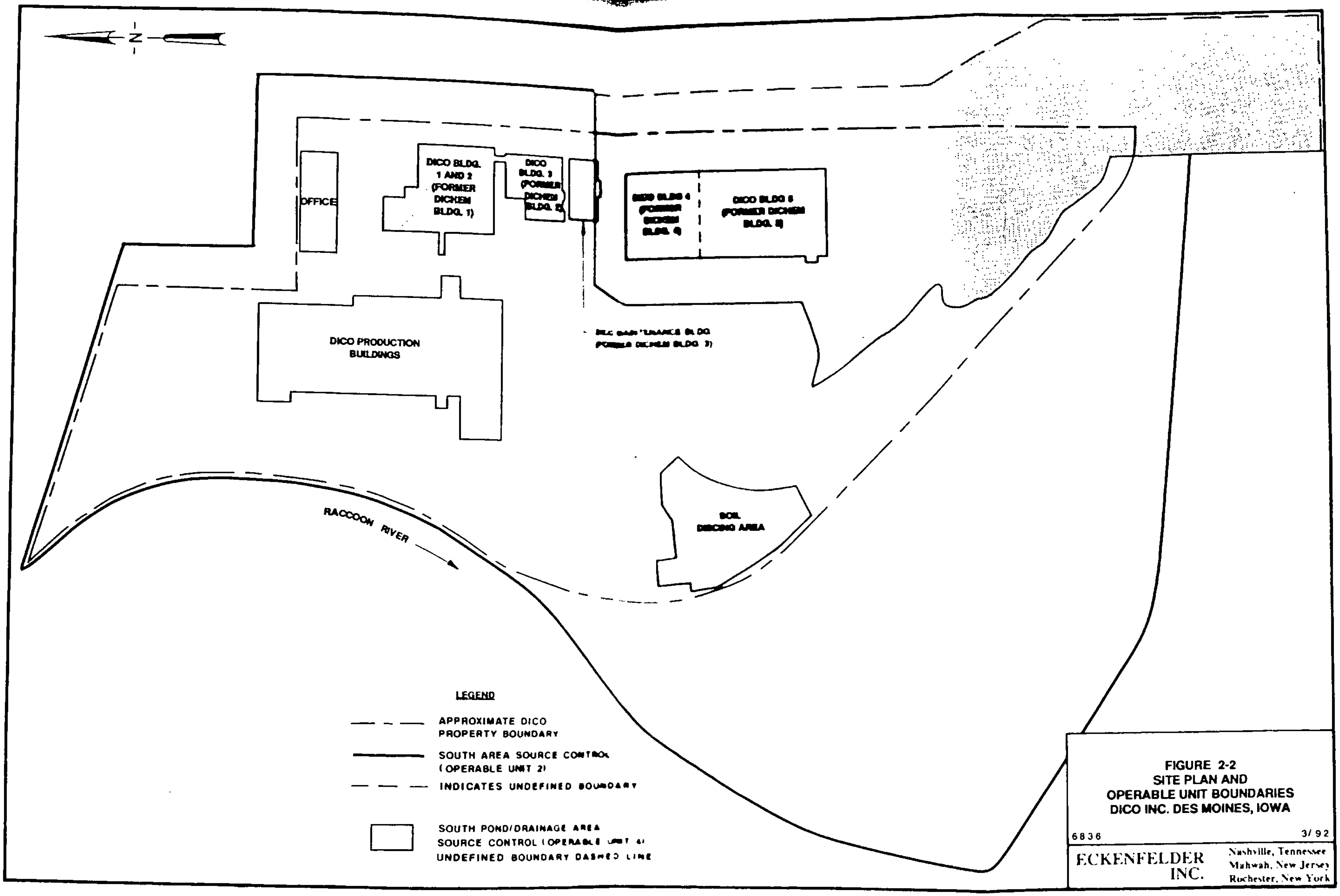


FIGURE 2-2
SITE PLAN AND OPERABLE UNIT BOUNDARIES
DICO INC. DES MOINES, IOWA

6836 3/92

ECKENFELDER INC. — Nashville, Tennessee; Mahwah, New Jersey; Rochester, New York from Charles Lettow, Esq., Cleary, Gottlieb, Steen & Hamilton dated May 20, 1992. This current use and occupancy information is also included in the following discussions.

Based on information received from personal communications with DICO employees, an entity called DiChem, Inc. previously used the buildings to conduct chemical and herbicide distribution operations as well as for pesticide formulation activities. The pesticide formulation and distribution operations occurred between the mid to late 1950's through 1970. For a period of time, under a contract with Shell Oil Company, aldrin was heated to liquid form in a tank used exclusively for that purpose and sprayed onto fertilizer. Shell then sold the product. Similarly, under contract with Chevron Chemicals Company, DiChem prepared lawn fertilizer containing herbicides and pesticides (chlordane and heptachlor) which Chevron then sold. Other pesticides and herbicides were prepared or stored and distributed by DiChem for Monsanto and American Oil Products. In each instance, the pesticide materials were continually owned by the manufacturers for which the formulation activities were performed. The manufacturers provided instructions and supervision for the formulation operations, and they also specified equipment, processes, and all other related procedures, furnished the packaging for the materials, and marketed the finished product. DiChem discontinued operations at the property in the early 1970s. Buildings 1 through 5 and the Maintenance Building were at one time referred to as DiChem Buildings 1 through 5.

A person who had been employed by DiChem indicated that solvents were used in some pesticide formulation activities. Reportedly toluol was used with aldrin formulation activities. The toluol was apparently hauled to the aldrin tank area by truck. Xylene may have been used in place of toluol in the coldest periods of the year.

Typical roofing on all buildings (except Building 1) consists of a built-up and standing seam roof construction in which the roofing is fastened to exposed interior roof joists. The roof consists of insulation covered with either a foil fabric or a metal liner panel overlain by metal deck. Based on information obtained from DICO, Abild Construction Company in Des Moines constructed the roofs. The roof insulation was obtained from L & L Insulation, also located in Des Moines. It is not known what type of adhesive was used on the insulation to adhere the foil fabric to the insulation. However, it is known that Aroclor 1254 was used as a component in adhesives during the same time frame that the buildings were constructed. See, for example, the National Library of Medicine, Hazardous Substances Data Bank.

Insulation used in the buildings was manufactured by Dow Corning. In recent discussions, officials of that company indicated that they never used PCBs in insulation but that it was a common practice in the industry to use a fire retardant in adhesives used to apply paper or foil backing to the insulation.

Discussions with L&L Insulation disclosed that that company as currently constituted is not the same company that existed when the insulation was prepared and installed in the buildings. The prior entity called L&L Insulation sold assets and its name to new owners and then dissolved. The current company has no records from the older company concerning insulation. Officials of the current company could not address whether the prior company might have used adhesives containing fire retardants or, if they did, whether they knew PCBs were present or not.

Building No. 1 (Sample Building E). This building (3,920 square feet) is attached to Building No. 2 and the two are separated by a block and sheet metal partition. The floor is a concrete slab on grade. The approximate date of construction is 1950. Building No. 1 is used to house two boilers (source of steam), a conference/office room, and a small test laboratory. It appears that the interior walls of the building have been recently painted; however, the date is unknown. Each boiler has a large (3 to 4 foot diameter) roof fan and an air conditioning unit is hung from the roof in the office. The majority of the piping in the building is associated with the boilers. The northeast section of the building houses miscellaneous equipment and shelving.

The open ceiling is covered with a metal liner panel which is a part of the roof construction. The ceiling height appears to be uniform at approximately 18 feet above the floor elevation.

Currently the building is used only for limited purposes. Occupational use of the building occurs a maximum of 4 hours per day in the test lab area. Also, maintenance on the boilers is performed as needed.

Building No. 2 (Sample Building D). The building (37,200 square feet) was constructed between 1955 and 1966. The northwest quadrant of the building was constructed first, then the northeast quadrant, and finally the southern half of the building. The building is currently used primarily as a storage/staging area for wheels, tires, and other parts. Some parts are contained in cardboard boxes and most materials are stored on wooden pallets. Aisles are delineated throughout the building so that forklift trucks can travel within the building. The floor is a concrete slab on grade. A small office and restroom are located in the northwest quadrant of the building and a small dip painting line is located in the northeast quadrant of the building.

Insulated steam lines and other piping (2 inch to 4 inch diameter) are hung from the ceiling at various locations. Heat in the building is provided by overhead steam-fed fans located above large overhead doors. The open ceiling ranges in height from 15 feet at the lowest portions of the spans to 25 feet at the peaks of the spans.

Occupational use of this building is restricted to transient forklift truck drivers who handle warehoused material and operation of the dip painting line. Dip painting operations typically require 16 man-hours per day and inventory storage requires 4 man-hours per day.

Building No. 3 (Sample Building C). The building (20,000 square feet) was constructed between 1959 and 1967. The northern room was constructed first, then the southern room, then the western annex.

The northern room has an open ceiling and heat is provided by overhead steam fed fans. Much of the painting on the structural steel is chipped and loose. The approximate ceiling height ranges from 18 feet above the floor in the lower portions of the spans to 25 feet above the floor at the peaks of the spans. The partition separating the northern and the southern room contains some cracks and openings. All floors in the building are concrete slabs on grade.

The southern room of the building has the same ceiling heights as the northern room. Heat is provided by the overhead steam-fed fans. The southern room may be heated by natural gas.

The western (annex) room of the building has a relatively flat open ceiling approximately 20 feet high. As discussed above, this room was constructed later than the rest of the building and the eastern wall of the room is the former exterior wall of Building No. 3.

The building currently is not used.

Maintenance Building (Sample Building A). The building (12,000 square feet) was constructed in 1964. It is subdivided into several large rooms and is currently vacant. An aldrin tank annex was constructed somewhat later. A vehicle service pit is located in the northwestern room of the building. A large doorway which provided access to the aldrin tank has been enclosed. Located in the annex is a 2,000 gallon vessel which is partially underground and the subject of a separate engineering evaluation report. This vessel was previously used solely to heat aldrin during DiChem's formulation operations.

The northwest and southwest rooms have an open ceiling. No exposed insulation exists and metal liner panels cover the ceiling. Heat is supplied by either gas-fueled or steam-fed ceiling fans. The floors are concrete slabs on grade. The span peak ceiling height is approximately 30 feet above the floor elevation and the span low point height is 20 feet above the floor elevation in both rooms.

The eastern rooms each have a suspended ceiling and are heated with gas space heaters. A window air conditioning unit was used. The dates of partition and ceiling construction are unknown. The ceiling height is approximately 7 to 8 feet above the floor in these areas.

Building Nos. 4 and 5 (Sample Buildings B and F). Building Nos. 4 and 5 are actually one large (100,000 square foot) building constructed in 1963 and 1964. The distinction between the two buildings is made by an upper partial partition located approximately 225 feet south of the northern wall of Building No. 4 which extends from the ceiling to approximately 10 to 15 feet above the floor elevation. Both buildings were used most recently as a warehouse; they are now vacant. A small office area is located close to the center of the building. The building is currently not heated. The floor is a concrete slab on grade.

The building has an open ceiling which ranges in height from approximately 18 feet at the lowest portions of the span to approximately 30 feet at the peak of the span.

2.2.2 Insulation

A walk-through observation of the ceiling and wall insulation was conducted on January 31, 1992 in Buildings 1 through 5 and the Maintenance Building. Photographs corresponding to the descriptions below are included in Appendix A.

Building No. 1 (Sample Building E). The building has a roof system with an exposed metal liner panel. No insulation exists between the liner panel and the roof in the building. Because no ceiling insulation exists, a sample of the asphalt-impregnated board sandwiched above the ceiling liner panel (part of the roof system) was taken. This material was exposed to the interior at the roof opening cut to facilitate an air conditioning unit in the office area.

Building No. 2 (Sample Building D). As discussed previously, the northwest quadrant was constructed first in this building. Insulation exists in the ceiling but not in the walls which are constructed of block and some sheet metal. Ceiling insulation is covered with a mesh fabric reinforced aluminum foil panel and the foil is covered with a paper-type laminate material. The integrity of the foil panel appears to be good within most of the area. A few minor tears in the panels exist, but are not greater than 3 to 4 inches in any dimension. Photograph 1, Appendix A, depicts the area.

The northeast quadrant of the building was constructed at a later date than the previously described area. The panels covering the ceiling insulation consist of an aluminum foil material with a paper laminate, but no mesh fabric reinforcement as was typical of the previously described area of this building. Tears in the panel appear somewhat more frequently than in the northwest quadrant, but no greater than approximately 10 percent of the panel areas (between beams and joists) contain small (less than 4 inch) tears. No wall insulation is apparent. Photograph 2, Appendix A, depicts the area in January 1992.

The south section of this building was constructed after the two sections discussed above. The panel covering the ceiling insulation consists of a shiny aluminum foil with fabric reinforcement. No paper-like finish exists. A few areas contain large (greater than one square foot) tears and approximately 20 percent of the panel areas contain small tears. The western section of the area is more intact than the eastern section. An area in the north wall contains some exposed insulation that is a pink color rather than the beige color typical in the ceiling. Photographs 3, 4, and 5, Appendix A, depict the area in January 1992.

Walkway between Buildings No. 2 and No. 3. This walkway was constructed after Buildings No. 2 and No. 3 were constructed and contains insulation on the walls. Several tears are apparent in this insulation. Photograph 6, Appendix A, depicts the area in January 1992.

Building No. 3 (Sample Building C). As discussed previously, the northern portion of this building was constructed prior to the remainder of the building. Insulation exists in the ceiling which is covered with a non-reinforced aluminum foil. The majority of the panels appear to be intact with a few minor tears in the ceiling insulation. The south wall of the room is insulated and several tears exist in the foil panel as well as the insulation itself. The paint on the upper structural steel in this room is peeling significantly. Photograph 7, Appendix A, depicts ceiling insulation and Photograph 8 depicts the south wall insulation in January 1992.

Insulation exists on the north and south walls as well as in the ceiling. Most of the north wall insulation is covered with a metal liner panel. The majority of the insulation on the south wall contains tears and large holes. The majority of the insulation on the north wall is not exposed. The majority of the insulation in the ceiling (non-reinforced aluminum foil covered) is intact and a small number of very small (less than 2-inch) holes exist. Photographs 9 and 10, Appendix A, depict the area in January 1992.

The western annex of this building was constructed after the north and south portions. Foil covered insulation exists on the upper portions of the north, west, and south walls as well as on the ceiling. The wall insulation is intact except for four locations where the insulation has been damaged. Large tears exist at these four locations. The majority of the ceiling insulation appears to be intact with very few small tears. Photographs 11 and 12, Appendix A, depict this room in January 1992.

Maintenance Building (Sample Building A). The entire building was constructed at the same time and all ceiling insulation is covered with a metal liner panel. Wall insulation probably exists, but walls are covered with a metal liner panel. No visibly exposed insulation exists in either the ceiling or the walls.

Buildings 4 and 5 (Sample Buildings B and F). These two buildings, constructed within one year of each other, are only separated by a partial partition, which extends between the ceiling to approximately 10 to 15 feet above the floor elevation. The ceilings and the walls contain insulation covered by fabric reinforced aluminum foil panels. Also, a new roof was installed on the existing roof of these two buildings during the 1970s so the ceiling exposed inside of the buildings is part of the original roof. Some ceiling insulation in the north portion of Building 4 has been significantly disturbed with some large sections of insulation "hanging" from the ceiling. This occurred as the result of a leaking roof that was subsequently replaced in the 1970s. However, the majority (90 percent) of the ceiling insulation in both buildings is intact. Probably 80 to 90 percent of the wall insulation in the two buildings has been torn. No large tears exist in the walls, but small tears exist in many of the panels. Photographs 13, 14, 15, and 16, Appendix A, depict Building 4. Photographs 17 and 18 depict Building 5 in January 1992.

2.3 BUILDING EVALUATION

As previously discussed, three separate building investigations were conducted. The initial investigation, performed in September 1991 with oversight by USEPA, consisted of dust and wipe samples in Buildings 3 and 4 and the Maintenance Building to determine the possible presence of residual pesticides in the buildings. The second investigation consisted of dust samples collected in Buildings 1 through 5 and the Maintenance Building. This investigation was conducted to more conclusively determine which buildings contained residual pesticides. The third investigation performed in January 1992 by order of and oversight by USEPA addressed all of the buildings discussed above. This investigation was to determine the possible presence of PCBs in the buildings.

2.3.1 Investigation and Procedures

Exact sample locations were field determined. Sample locations during the first and third investigation were jointly selected with USEPA oversight, but USEPA did not elect to take split samples. Sample locations for the first investigation were selected based on knowledge of historical manufacturing activities, such as in the vicinity of the aldrin tank, in the vicinity of former mixing areas, etc. Sample locations for the second investigation were selected to include all six of the buildings. Sample locations for the third investigation were selected with reference to the possible presence of PCBs in the buildings and in the insulation materials. Samples were taken to represent all of the various dates of construction associated with all of the buildings.

During each investigation, samples were assigned the prefix WP, followed by the building identification (A through F), and the number of the location. In the case of dust samples, "D" follows the location number. Insulation samples incorporate an F, I, or R following the location number which refers to foil backing, intermediate layer, and adjacent to roof, respectively, in order to distinguish the depth interval. An example of this identification method is as follows:

- WPE-1 Wipe sample number 1 located in Building E.
- WPA-2D Dust sample number 2 located in Building A.
- WPD-3F Insulation sample number 3, foil interval, location in Building D.

Sample designations for dust, wipe, and insulation samples collected during this investigation followed this procedure. Deviations from this procedure, when they occurred, are identified in the discussion below.

Forty-six (46) interior wipe samples (including replicates and overlays); 27 dust samples, and 34 insulation samples were collected. A description of the location and the analytical results for samples are shown in Tables 2-1 through 2-4 and in Figures 2-3 through 2-7. Samples were collected in accordance with the approved Work Plans. Analyses were performed by the ECKENFELDER INC. laboratory located in Nashville, Tennessee.

TABLE 2-1

INTERIOR BUILDING WIPE SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PESTICIDES)

DICO INC.
DES MOINES, IOWA

Sample	Type	Sample Date	Location	Pesticide Compound by USEPA Method 8081 (micrograms per 100 square centimeters)				
				Aldrin	Dieldrin	Heptachlor	Alpha Chlordane	Gamma Chlordane
WPA-1	Wipe	9/3/91	Maintenance Bldg., S wall of Aldrin Tank Room, support beam 5 ft above floor	67	12.7	0.10	4.25	4.95
WPA-1A	Wipe	9/3/91	Same (Replicate)	46.5	1.24	0.10	0.82	0.93
WPA-3	Wipe	9/3/91	Maintenance Bldg., E wall of Aldrin Tank Room, top of beam, 7 ft above floor	0.14	0.13	0.02	0.08	0.11
WPA-3OL	Wipe	9/3/91	Same (Overlay)	21.8	0.15	0.04	0.36	0.34
WPA-4	Wipe	9/3/91	Maintenance Bldg., W wall of Aldrin Tank Room, top of beam, 7 ft above floor	117	9.62	0.34	5.13	4.88
WPA-5	Wipe	9/3/91	Maintenance Bldg., SE corner of maintenance room, top of worker's locker	1.74	0.40	0.04	0.56	0.54
WPA-6	Wipe	9/3/91	Maintenance Bldg., N side of maintenance room, storage rack, 5 ft above floor	0.28	0.38	0.02	0.28	0.29
WPA-7	Wipe	9/3/91	Maintenance Bldg., N wall of garage, top of storage cabinet, 7 ft above floor	0.07	0.21	0.01	0.09	0.13
WPB-1	Wipe	9/3/91	Bldg. 4, side of cage bins adjacent to former mixer area, 2.5 ft above floor	0.67	BMDL	0.04	0.15	0.39
WPB-2	Wipe	9/3/91	Bldg. 4, just E of center of N wall, beam, 5 ft above floor	0.23	BMDL	0.01	0.06	0.14
WPB-2A	Wipe	9/3/91	Same (Replicate)	0.11	BMDL	0.01	0.03	0.08
WPB-4	Wipe	9/4/91	Bldg. 4, top of vent hood, directly above old mixer area	12.9	BMDL	0.49	10.8	18.2
WPB-7	Wipe	9/4/91	Bldg. 4, 2 bays S of N wall, 1 bay W of E wall, roof beam	0.17	BMDL	0.03	0.05	0.13
WPB-8	Wipe	9/4/91	Bldg. 4, 4 bays S of N wall, 1 bay W of E wall, roof beam	0.19	BMDL	0.01	0.06	0.20
WPB-9	Wipe	9/4/91	Bldg. 4, 6 bays S of N wall, 1 bay W of E wall, roof beam	0.18	BMDL	0.01	0.05	0.17
WPB-10	Wipe	9/4/91	Bldg. 4, W of office near center wall, beam, 5 ft above floor	0.03	0.03	BMDL	0.01	0.03
WPC-2	Wipe	9/3/91	Bldg. 3, top of concrete base for beam, N wall, old mixer area, 1 ft above floor	0.40	0.53	0.11	0.60	0.76
WPC-4	Wipe	9/3/91	Bldg. 3, E side of bay floor, N wall, 5 ft above floor	0.02	BMDL	BMDL	0.02	0.03

TABLE 2-1 (Continued)

INTERIOR BUILDING WIPE SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PESTICIDES)

DICO INC.
DES MOINES, IOWA

Sample	Type	Sample Date	Location	Pesticide Compound by USEPA Method 8081 (micrograms per 100 square centimeters)				
				Aldrin	Dieldrin	Heptachlor	Alpha Chlordane	Gamma Chlordane
WPC-5	Wipe	9/4/91	Bldg. 3, ceiling joist adjacent to old mixer area	0.65	BMDL	0.17	1.03	1.15
WPC-7	Wipe	9/4/91	Bldg. 3, N side of S room, ceiling joist	0.50	BMDL	0.06	0.23	0.28
WPC-8	Wipe	9/4/91	Bldg. 3, middle of S room, top of fan hood	69.8	3.38	0.20	2.38	2.44
WPC-8OL	Wipe	9/4/91	Same (Overlay)	0.02	BMDL	BMDL	BMDL	BMDL
WPC-9	Wipe	9/4/91	Bldg. 3	0.80	0.41	0.09	0.45	0.53
WPC-10	Wipe	9/4/91	Bldg. 3, W room	0.87	0.47	0.07	0.35	0.38

TABLE 2-2

INTERIOR BUILDING DUST SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PESTICIDES)

DICO INC.
DES MOINES, IOWA

Sample	Type	Sample Date	Location	Pesticide Compound by USEPA Method 8081 (milligrams per kilogram)				
				Aldrin	Dieldrin	Heptachlor	Alpha Chlordane	Gamma Chlordane
WPA-2D	Dust	9/3/91	Maintenance Building, S wall aldrin tank room, top of beam, 7 ft above floor	520,000E[c]	8,800	BMDL	BMDL	40
WPA-8D	Dust	9/4/91	Maintenance Building, 2 bays E of W door of garage, ceiling joist	12	BMDL	1.7	14	17
WPA-9D	Dust	9/4/91	Maintenance Building, 1 bay W of E wall of work room, ceiling joist	11	23	0.75	8	8.7
WPA-10D	Dust	9/4/91	Maintenance Building, 1 bay E of W wall of work room, ceiling joist	13	33	0.82	12	13
WPB-3D	Dust	9/4/91	Building 4, 1 bay E of W wall of work room, ceiling joist	100	130	7.5	20	43
WPB-5D	Dust	9/4/91	Building 4, ceiling joist adjacent to fan hood above old mixer area	BMDL	200E	5.3	26	45
WPB-6D	Dust	9/4/91	Building 4, 2 bays S of N wall, 1 bay E of W wall, celing joist	BMDL	57E	2.7	11	27E
WPC-1D	Dust	9/3/91	Building 3, westernmost window sill, N wall old mixer area, 5 1/2 ft above floor	11	19E	BMDL	6.7	13
WPC-3D	Dust	9/3/91	Building 3, N wall, old mixer area, floor around concrete base for column	220	1,000E	3.8	BMDL	17
WPC-6D	Dust	9/4/91	Building 3, E end of N room, top of fan and adjacent ceiling joist	9.7	14	5.5	9.5	12
WPD-1D[b]	Insulation	11/25/91	Building 2, NW quad, 9 joists E of W wall, 2 bays S of N wall, insulation sample	BMDL	BMDL	BMDL	BMDL	BMDL
WPD-2D[a]	Dust	11/25/91	Building 2, NW quad, 9 joists E of low point, 2 bays S of N wall, ceiling beam	17	63	5.7	5.5	11
WPD-3D[a]	Dust	11/25/91	Building 2, NE quad, 9-11 joists E of W wall, 2 bays S of N wall, ceiling beam	15	27	1.8	3.2	4.4
WPD-4D[a]	Dust	11/25/91	Building 2, NE quad, 3 joists E of low point, 3 bays S of N wall, top of light fixture	37	59	2.3	3.5	4.7
WPD-5D[a]	Dust	11/25/91	Building 2, SE quad, 3 bays S of N wall, 4 joists E of low point, ceiling beam	11	16	2.4	3.6	4.9

TABLE 2-2 (Continued)

INTERIOR BUILDING DUST SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PESTICIDES)

DICO INC.
DES MOINES, IOWA

Sample	Type	Sample Date	Location	Pesticide Compound by USEPA Method 8081 (milligrams per kilogram)				
				Aldrin	Dieldrin	Heptachlor	Alpha Chlordane	Gamma Chlordane
WPD-6D[a]	Dust	11/25/91	Building 2, SE quad, 3 bays S of N wall, 4 joists E of low point, ceiling beam	4.7	4.8	0.68	0.84	1.3
WPD-7D[a]	Dust	11/25/91	Building 2, SW quad, 3 bays S of N wall, 8-9 joists E of low point, ceiling beam	4.8	7.3	1.2	1.6	2.7
WPD-8D[a]	Dust	11/25/91	Building 2, SW quad 4 bays S of N wall, 8-9 joists E of W wall, ceiling beam	2.6	7.3	0.94	1.9	2.9
WPE-1D[a]	Dust	11/25/91	Building 1, beam in center of building, directly adjacent to office	0.39	11E	0.51	2.4	1.7
WPE-2D	Dust	11/25/91	Former drum filling garage, top of siding girt, E and W side of building, 4 ft 6 in above floor	0.04	0.19	0.04	0.18	0.16
WPF-1D[a]	Dust	11/26/91	Building 5, 1 bay W of E wall, 4 bays S of N wall, ceiling beam	7.6	5.0	2.4	4.5	6.6
WPF-2D[a]	Dust	11/26/91	Building 5, 1 bay W of E wall, 2 bays N of S wall, ceiling beam	16.0	4.0	1.6	4.9	6.4
WPF-3D[a]	Dust	11/26/91	Building 5, 1 bay E of W wall, 2 bays N of S wall, ceiling beam	10.0	3.2	1.3	5.7	5.9
WPF-4D[a]	Dust	11/26/91	Building 5, 1 bay E of W wall, 3 bays S of N wall, ceiling beam	59.0	6.9	1.6	6.3	8.6
WPB-11D[a]	Dust	11/26/91	Building 4, 1 bay E of W wall, 2 bays N of S wall, ceiling beam	68.0	31.0	1.5	13.0	21.0
WPB-12D[a]	Dust	11/26/91	Building 4, 1 bay W of E wall, 3 bays N of S wall, ceiling beam	8.4	12.0	1.3	5.8	7.7
WPB-13D[a]	Dust	11/26/91	Building 4, 1 bay W of E wall, 2 bays S of N wall, ceiling beam	9.2	23.0	1.2	9.2	10.0

[a]Qualitative identification of PCB (Aroclor 1254) should be noted.
[b]PCB (Aroclor 1254) estimated at 1000 milligrams/kilogram.
[c]"E" denotes estimated value.

TABLE 2-3

INTERIOR BUILDING INSULATION SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PCBs)

DICO INC.
DES MOINES, IOWA

Sample[a]	Type	Sample Date	Location	PCB Compound by USEPA 8081 (milligrams per kilogram) 1254	1260
WPE - 1I	Insulation	1/30/92	Building 1, roof opening for A/C unit in office.	BMDL	BMDL
WPF - 1F	Insulation	1/30/92	Building 5, NE quad, 2 bays S of N wall, 6.5 joists W of E wall.	29,000	BMDL
WPF - 1I	Insulation	1/30/92	same as WPF - 1F	340	BMDL
WPF - 1R	Insulation	1/30/92	same as WPF - 1F	160	BMDL
WPB - 1F	Insulation	1/30/92	Building 4, NE quad, 3 bays S of N wall, 8.5 joists W of E wall.	2,700	BMDL
WPB - 1I	Insulation	1/30/92	same as WPB - 1F	210	BMDL
WPB - 1R	Insulation	1/30/92	same as WPB - 1F	250	BMDL
WPA - 1I	Insulation	1/30/92	Maintenance Building 3 bays W of E wall, 10 ft S of N wall at bracing.	67	BMDL
WPA - 1R	Insulation	1/30/92	same as WPA - 1I	110	BMDL
WPC - 1F	Insulation	1/30/92	Building 3, northern warehouse, 1 bay W of E wall, 1 joist N of low point in roof center line.	BMDL	170
WPC - 1I	Insulation	1/30/92	same as WPC - 1F	BMDL	7.5
WPC - 1R	Insulation	1/30/92	same as WPC - 1F	BMDL	12
WPC - 2F	Insulation	1/30/92	Building 3, southern area, 2 bays W of E wall, 2 joists N of roof center line.	15,000	BMDL
WPC - 2I	Insulation	1/30/92	same as WPC - 2F	1,800	BMDL
WPC - 2R	Insulation	1/30/92	same as WPC - 2F	1,400	BMDL
WPC - 3F	Insulation	1/30/92	Building 3, western shop annex, 1 bay E of W wall, 4 joists N of S wall (near door)	38E[b]	BMDL
WPC - 3I	Insulation	1/30/92	same as WPC - 3F	BMDL	BMDL
WPC - 3R	Insulation	1/30/92	same as WPC - 3F	BMDL	BMDL
WPD - 1F	Insulation	1/30/92	Building 2, NW quad, 2 bays S of N wall, 9 joists E of W wall.	14,000	BMDL
WPD - 1I	Insulation	1/30/92	same as WPD - 1 F	410	BMDL
WPD - 1R	Insulation	1/30/92	same as WPD - 1F	350	BMDL
WPD - 9D	Insulation	1/30/92	2 ft S of WPD - 1F. Same location as WPD -1D collected 9/3/91.	230	BMDL

TABLE 2-3 (Continued)

INTERIOR BUILDING INSULATION SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PCBs)

DICO INC.
DES MOINES, IOWA

Sample[a]	Type	Sample Date	Location	PCB Compound by USEPA 8081 (milligrams per kilogram)	
				1254	1260
WPD - 2F	Insulation	1/30/92	Building 2, NE quad, 1 bay S of N wall, 1 joist W of center low point.	2,000	800
WPD - 2I	Insulation	1/30/92	same as WPD - 2F	840	160
WPD - 2R	Insulation	1/30/92	same as WPD - 2F	640	27
WPD - 3F	Insulation	1/30/92	Building 2, SE quad, 2 bays N of S wall, 1 joist E of roof low point (near Building 3 walkway).	9,600	BMDL
WPD - 3I	Insulation	1/30/92	same as WPD - 3F	140	BMDL
WPD - 3R	Insulation	1/30/92	same as WPD - 3F	120	BMDL
WPB - 2I	Disturbed Insulation	1/31/92	Building 4, W side, bay S of N wall, 3 bays E of W wall, near former mixer area	300	BMDL
WPC - 4I	Disturbed Insulation	1/31/92	Building 3, directly above E edge of former mixer area in NW corner.	BMDL	22
WPB - 3I	Insulation	1/31/92	Building 4, wall insulation, 3 bays S of N wall, 4 ft above floor on E wall, N of column 5QI.	250	BMDL
WPF - 2I	Insulation	1/31/92	Building 5, wall insulation, W wall, 6 bays N of S wall, near column 5E4, 5 ft above floor.	200	BMDL
WPC - 5I	Insulation	1/31/92	Building 3, south side, S wall insulation, 2 ft E of overhead door 6.5 ft above floor.	160	BMDL
WPC - 6I	Insulation	1/31/92	Building 3, side, wall insulation, S partition, 2 bays W of E wall, adjacent to E side of second column.	38	BMDL

[a]F = Foil backing.
I = Intermediate layer.
R = Adjacent to roof.
[b]E = Estimated value. Clear visual picture was not observed due to sample matrix.

TABLE 2-4

INTERIOR BUILDING WIPE SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PCBs)

DICO INC.
DES MOINES, IOWA

Sample	Type	Sample Date	Location	PCB Compound by USEPA 8081 (micrograms per 100 sq cm) 1254	1260
WPE - 3	Wipe	1/30/92	Building 1, floor wipe 5 ft E of W wall, adjacent to S boiler.	BMDL	BMDL
WPE - 4	Wipe	1/20/92	Building 1, wipe on W wall, 5 ft S of N wall, 4.5 ft above floor.	BMDL	BMDL
WPD - 10	Wipe	1/30/92	Building 2, floor wipe NW quad, 2.5 bays N of S wall, 4-5 ft E of W wall.	BMDL	BMDL
WPD - 11	Wipe	1/30/92	Building 2, column wipe NW quad, 2 bays S of N wall, along centerline of building, 4 ft above floor.	BMDL	BMDL
WPD - 11A	Wipe (Replicate)	1/30/92	Same as WPD - 11	BMDL	BMDL
WPD - 12	Wipe	1/30/92	Building 2, floor wipe, NE quad, 2.5 bays S of N wall, 5 ft E of center column line.	BMDL	BMDL
WPD - 13	Wipe	1/30/92	Building 2, column wipe, NE quad, N wall, center column line (on web of column).	BMDL	BMDL
WPD - 14	Wipe	1/30/92	Building 2, floor wipe, S area, 3 ft N of S wall, 10 ft E of building center line.	BMDL	BMDL
WPD - 15	Wipe	1/30/92	Building 2, door frame wipe, E side of W door between NW and S quads, 4 ft above floor.	BMDL	BMDL
WPB - 14	Wipe	1/31/92	Building 4, floor wipe, W side of former mixer area, adjacent to column 5T3, 5S3 (NW corner).	35	BMDL
WPB - 14OL	Wipe (Overlay)	1/31/92	same as WPB - 14 Overlay	25	BMDL
WPF - 5	Wipe	1/31/92	Building 5, column wipe, 6 bays S of divider wall, 1 bay W of E wall, on column 5E2, 4 ft above floor.	BMDL	BMDL
WPA - 11	Wipe	1/31/92	Maintenance Building, south side, wipe on S wall, approx. 10 ft W of partition, 4 ft above floor.	BMDL	BMDL
WPA - 12	Wipe	1/31/92	Maintenance Building, south side, floor wipe, 10 ft W of partition, 8 ft N of S wall.	BMDL	BMDL
WPA - 13	Wipe	1/31/92	Maintenance Building, side, hollow metal door wipe, E partition wall, 4 ft above floor.	BMDL	BMDL
WPC - 11	Wipe	1/31/92	Building 3, south side, floor wipe, 8 ft S of N wall, 4 Ft W of partition.	BMDL	BMDL
WPC - 12	Wipe	1/31/92	Building 3, south side, SW quad. wipe on hollow metal door on N wall.	BMDL	BMDL

TABLE 2-4 (Continued)

INTERIOR BUILDING WIPE SAMPLE LOCATIONS AND ANALYTICAL RESULTS (PCBs)

DICO INC.
DES MOINES, IOWA

Sample	Type	Sample Date	Location	PCB Compound by USEPA 8081 (micrograms per 100 sq cm)	
				1254	1260
WPC - 13	Wipe	1/31/92	Building 3, south side, column wipe on N partition, 20-25 ft W of E wall.	BMDL	BMDL
WPC - 14	Wipe	1/31/92	Building 3, side, column wipe, N wall, adjacent to E side of old mixer area, 9-10 ft above floor.	BMDL	BMDL
WPC - 15	Wipe	1/31/92	Building 3, side, floor wipe, 20-25 ft W of E wall, 25-30 ft N of S partition.	BMDL	BMDL
WPC - 15A	Wipe (Replicate)	1/31/92	Same as WPC - 15	BMDL	BMDL
WPC - 15OL	Wipe (Overlay)	1/31/92	Same as WPC - 15	BMDL	BMDL

Q:\6836\FET0204.DOC

WPD - 11 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPD - 11A (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPD - 3D (dust)	Concentration (mg/kg)
Aldrin	15
Dieldrin	27
Heptachlor	1.8
Alpha-chlordane	3.2
Gamma-chlordane	4.4
PCBs	NA

WPD - 2 (insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	2,000	840	640
PCB - 1260	800	180	27

WPD 13 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPS - 4D (dust)	Concentration (mg/kg)
Aldrin	37
Dieldrin	80
Heptachlor	2.3
Alpha-chlordane	3.5
Gamma-chlordane	4.7
PCBs	NA

WPD - 12 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPD - 8D (dust)	Concentration (mg/kg)
Aldrin	11
Dieldrin	18
Heptachlor	2.4
Alpha-chlordane	3.8
Gamma-chlordane	4.8
PCBs	NA

WPD - 6D (dust)	Concentration (mg/kg)
Aldrin	4.7
Dieldrin	4.8
Heptachlor	0.88
Alpha-chlordane	0.84
Gamma-chlordane	1.3
PCBs	NA

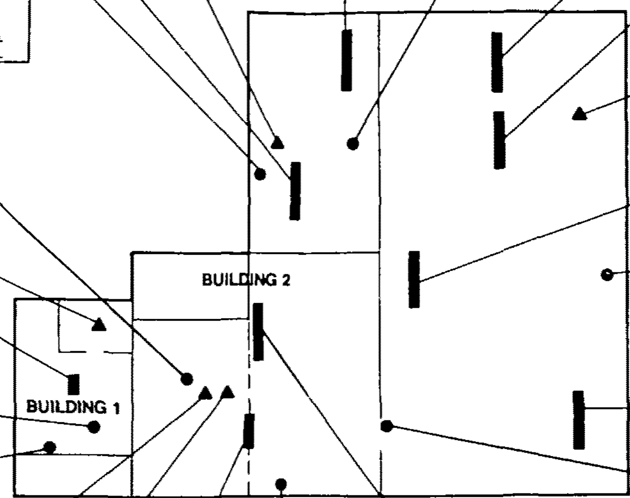
WPD - 3 (insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	9,600	140	120
PCB - 1260	BMDL	BMDL	BMDL

WPE - 1 (insulation)	concentration (mg/kg)
	I
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPD - 7D (dust)	Concentration (mg/kg)
Aldrin	4.6
Dieldrin	7.3
Heptachlor	1.2
Alpha-chlordane	1.6
Gamma-chlordane	2.7
PCBs	NA

WPE - 1D (dust)	Concentration (mg/kg)
Aldrin	0.39
Dieldrin	11 E
Heptachlor	0.51
Alpha-chlordane	2.4
Gamma-chlordane	1.7
PCBs	NA

WPD - 14 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL



WPE - 3 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPD - 8D (dust)	Concentration (mg/kg)
Aldrin	2.6
Dieldrin	7.3
Heptachlor	0.94
Alpha-chlordane	1.9
Gamma-chlordane	2.8
PCBs	NA

WPE - 4 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPD - 15 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	HA
Heptachlor	NA
Alpha chlordane	NA
Gamma chlordane	NA
PCB 1254	BMDL
PCB - 1260	BMDL

WPD 2D (dust)	Concentration (mg/kg)
Aldrin	17
Dieldrin	63
Heptachlor	5.7
Alpha chlordane	5.5
Gamma chlordane	11
PCBs	NA

WPD - 1 (insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	14,000	410	350
PCB - 1260	BMDL	BMDL	BMDL

WPD - 9D (insulation)	concentration (mg/kg)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	230
PCB - 1260	BMDL

WPD - 1D (dust)	Concentration (mg/kg)
Aldrin	BMDL
Dieldrin	BMDL
Heptachlor	BMDL
Alpha-chlordane	BMDL
Gamma-chlordane	BMDL
PCBs	NA

WPD - 10 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha chlordane	NA
Gamma chlordane	NA
PCB 1254	BMDL
PCB - 1260	BMDL

SCALE 1' = 50'

DUST SAMPLE

WIPE SAMPLE

OL OVERLAY SAMPLE TAKEN FROM SAME AREA AS ORIGINAL SAMPLE

A REPLICATE SAMPLE TAKEN DIRECTLY ADJACENT TO ORIGINAL SAMPLE

INSULATION SAMPLE
- F - FOIL BACKING
- I INTERMEDIATE LAYER
- R ADJACENT TO ROOF

BMDL BELOW METHOD DETECTION LIMIT

E ESTIMATED VALUE CONCENTRATION EXCEEDS CALIBRATION RANGE OF THE GC/ECD

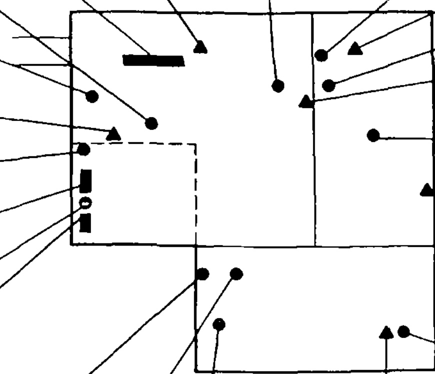
NA NOT ANALYZED FOR THE CONSTITUENT

DICO INC.
DES MOINES, IOWA

FIGURE 2-3
DICO BUILDINGS 1 and 2
(SAMPLE BUILDINGS E and D)

6836 2/92

ECKENFELDER INC. Nashville, Tennessee Mahwah, New Jersey



WPC - 6 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.66
Dieldrin	BMDL
Heptachlor	0.17
Alpha-chlordane	1.03
Gamma-chlordane	1.15
PCBs	NA

WPC - 6D (dust)	Concentration (mg/kg)
Aldrin	8.7
Dieldrin	14
Heptachlor	5.5
Alpha-chlordane	9.5
Gamma-chlordane	12
PCBs	NA

WPC - 1 (insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	BMDL	BMDL	BMDL
PCB - 1260	170	7.5	12

WPC - 15 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC 15DL (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC - 15A (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC - 13 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC - 2 (insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	15,000	1,800	1,400
PCB - 1260	BMDL	BMDL	BMDL

WPC - 7 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.5
Dieldrin	BMDL
Heptachlor	0.08
Alpha-chlordane	0.23
Gamma-chlordane	0.28
PCBs	NA

WPC - 4 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.02
Dieldrin	BMDL
Heptachlor	BMDL
Alpha-chlordane	0.02
Gamma-chlordane	0.03
PCBs	NA

WPC - 4I (insulation)	concentration (mg/kg)
	I
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	22

WPC - 6I (insulation)	concentration (mg/kg)
	I
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	38
PCB - 1260	BMDL

WPC - 14 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC - 8 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	[illegible]
Dieldrin	3.38
Heptachlor	0.2
Alpha-chlordane	2.38
Gamma-chlordane	2.44
PCBs	NA

WPC - 8DL (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.02
Dieldrin	BMDL
Heptachlor	BMDL
Alpha-chlordane	BMDL
Gamma-chlordane	BMDL
PCBs	NA

WPC - 3D (dust)	Concentration (mg/kg)
Aldrin	220
Dieldrin	1,000 E
Heptachlor	3.6
Alpha-chlordane	BMDL
Gamma-chlordane	17
PCBs	NA

WPC - 3 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.4
Dieldrin	0.53
Heptachlor	0.11
Alpha-chlordane	0.8
Gamma-chlordane	0.78
PCBs	NA

WPC - 10 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.87
Dieldrin	0.47
Heptachlor	0.07
Alpha-chlordane	0.38
Gamma-chlordane	0.38
PCBs	NA

WPC - 8I (insulation)	concentration (mg/kg)
	I
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha chlordane	NA
Gamma-chlordane	NA
PCB - 1254	180
PCB - 1260	BMDL

WPC - 9 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.8
Dieldrin	0.41
Heptachlor	0.08
Alpha-chlordane	0.45
Gamma-chlordane	0.53
PCBs	NA

WPC - 1D (dust)	Concentration (mg/kg)
Aldrin	11
Dieldrin	18 E
Heptachlor	BMDL
Alpha-chlordane	6.7
Gamma-chlordane	13
PCBs	NA

WPC - 12 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC - 11 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPC - 3 (insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha chlordane	NA	NA	NA
Gamma chlordane	NA	NA	NA
PCB - 1254	38 E	BMDL	BMDL
PCB - 1260	BMDL	BMDL	BMDL

DUST SAMPLE
WIPE SAMPLE
OL OVERLAY SAMPLE TAKEN FROM SAME AREA AS ORIGINAL SAMPLE
A REPLICATE SAMPLE TAKEN DIRECTLY ADJACENT TO ORIGINAL SAMPLE
INSULATION SAMPLE
F - FOIL BACKING
I - INTERMEDIATE LAYER
R - ADJACENT TO ROOF
BMDL BELOW METHOD DETECTION LIMIT
E ESTIMATED VALUE CONCENTRATION EXCEEDS CALIBRATION RANGE OF THE GC/ECD
NA NOT ANALYZED FOR THE CONSTITUENT

SCALE 1" = 50'

DICO INC.
DES MOINES, IOWA

FIGURE 2-4
DICO BUILDING 3
(SAMPLE BUILDING C)

6836 2/92

ECKENFELDER INC. Nashville, Tennessee Mahwah, New Jersey

WPA - 13 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPA - [illegible] (dust)	Concentration (mg/kg)
Aldrin	11
Dieldrin	23
Heptachlor	0.75
Alpha-chlordane	6
Gamma-chlordane	6.7
PCBs	NA

WPA - 5 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	1.74
Dieldrin	0.4
Heptachlor	0.04
Alpha-chlordane	0.58
Gamma-chlordane	0.54
PCBs	NA

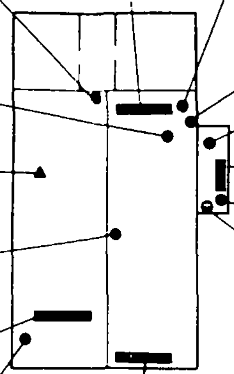
WPA - 11 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPA - 3 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.14
Dieldrin	0.13
Heptachlor	0.02
Alpha-chlordane	0.08
Gamma-chlordane	0.11
PCBs	NA

WPA - 3OL (wipe)	Concentration (ug/100 sq. cm)
Aldrin	21.5
Dieldrin	0.15
Heptachlor	0.04
Alpha-chlordane	0.38
Gamma-chlordane	0.34
PCBs	NA

WPA - 12 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPA - 1 (insulation)	concentration (mg/kg)	
	I	R
Aldrin	NA	NA
Dieldrin	NA	NA
Heptachlor	NA	NA
Alpha-chlordane	NA	NA
Gamma-chlordane	NA	NA
PCB - 1254	67	110
PCB - 1260	BMDL	BMDL



WPA - 2D (dust)	Concentration (mg/kg)
Aldrin	520,000 E
Dieldrin	6,800
Heptachlor	BMDL
Alpha-chlordane	BMDL
Gamma-chlordane	40
PCBs	NA

WPA - 6 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.26
Dieldrin	0.38
Heptachlor	0.02
Alpha-chlordane	0.28
Gamma-chlordane	0.29
PCBs	NA

WPA - 1 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	67
Dieldrin	12.7
Heptachlor	0.10
Alpha-chlordane	4.25
Gamma-chlordane	4.96
PCBs	NA

WPA - 1A (wipe)	Concentration (ug/100 sq. cm)
Aldrin	48.5
Dieldrin	1.24
Heptachlor	0.1
Alpha-chlordane	0.82
Gamma-chlordane	0.83
PCBs	NA

WPA - 8D (dust)	Concentration (mg/kg)
Aldrin	12
Dieldrin	BMDL
Heptachlor	1.7
Alpha-chlordane	14
Gamma-chlordane	17
PCBs	NA

WPA - 4 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	117
Dieldrin	9.62
Heptachlor	0.34
Alpha-chlordane	5.13
Gamma-chlordane	4.98
PCBs	NA

WPA - 7 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.07
Dieldrin	0.21
Heptachlor	0.01
Alpha-chlordane	0.09
Gamma-chlordane	0.13
PCBs	NA

WPA - [illegible] (dust)	Concentration (mg/kg)
Aldrin	13
Dieldrin	33
Heptachlor	0.82
Alpha-chlordane	12
Gamma-chlordane	13
PCBs	NA

DUST SAMPLE

WIPE SAMPLE

OL OVERLAY SAMPLE TAKEN FROM SAME AREA AS ORIGINAL SAMPLE

A REPLICATE SAMPLE TAKEN DIRECTLY ADJACENT TO ORIGINAL SAMPLE

INSULATION SAMPLE
F - FOIL BACKING
I - INTERMEDIATE LAYER
R - ADJACENT TO ROOF

BMDL BELOW METHOD DETECTION LIMIT

E ESTIMATED VALUE CONCENTRATION EXCEEDS CALIBRATION RANGE OF THE GC/ECD

NA NOT ANALYZED FOR THE CONSTITUENT

SCALE 1" = 50'

DICO INC.
DES MOINES, IOWA

FIGURE 2-5
DICO MAINTENANCE BUILDING
(SAMPLE BUILDING A)

6836 2/92

ECKENFELDER INC. Nashville, Tennessee Mahwah, New Jersey

WPS - 7 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.17
Dieldrin	BMDL
Heptachlor	0.03
Alpha-chlordane	0.06
Gamma-chlordane	0.13
PCBs	NA

WPS - 1 (insulation)	concentration (mg/kg) F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	2,700	210	250
PCB - 1260	BMDL	BMDL	BMDL

WPS - 6 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.18
Dieldrin	BMDL
Heptachlor	0.01
Alpha-chlordane	0.06
Gamma-chlordane	0.2
PCBs	NA

WPS - 8 [illegible]	concentration (mg/kg) I
[illegible]	NA
[illegible]	NA
[illegible]	NA
[illegible]	NA
[illegible]	NA
PCB [illegible]	[illegible]
PCB [illegible]	[illegible]

WPS - 13D (dust)	Concentration (mg/kg)
Aldrin	8.2
Dieldrin	23
Heptachlor	1.2
Alpha-chlordane	8.2
Gamma-chlordane	10
PCBs	NA

WPS - 9 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.18
Dieldrin	BMDL
Heptachlor	0.01
Alpha-chlordane	0.06
Gamma-chlordane	0.17
PCBs	NA

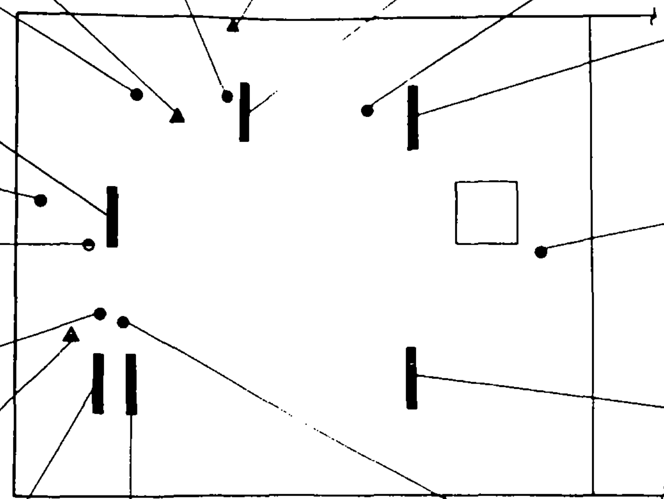
WPS - 12D (dust)	Concentration (mg/kg)
Aldrin	8.4
Dieldrin	12
Heptachlor	1.3
Alpha-chlordane	5.8
Gamma-chlordane	7.7
PCBs	NA

WPS - 2 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.23
Dieldrin	BMDL
Heptachlor	0.01
Alpha-chlordane	0.08
Gamma-chlordane	0.14
PCBs	NA

WPS - 8D (dust)	Concentration (mg/kg)
Aldrin	BMDL
Dieldrin	200 E
Heptachlor	5.3
Alpha-chlordane	28
Gamma-chlordane	45
PCBs	NA

WPS - 2A (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.11
Dieldrin	BMDL
Heptachlor	0.01
Alpha-chlordane	0.03
Gamma-chlordane	0.08
PCBs	NA

WPS - 4 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	12.9
Dieldrin	BMDL
Heptachlor	0.49
Alpha-chlordane	10.8
Gamma-chlordane	18.2
PCBs	NA



WPS - 10 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.03
Dieldrin	0.03
Heptachlor	BMDL
Alpha-chlordane	0.01
Gamma-chlordane	0.03
PCBs	NA

WPS - 14 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	36
PCB - 1260	BMDL

WPS - 14OL (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	25
PCB - 1260	BMDL

WPS - 11D (dust)	Concentration (mg/kg)
Aldrin	68
Dieldrin	31
Heptachlor	1.5
Alpha-chlordane	13
Gamma-chlordane	21
PCBs	NA

WPS - 1 (wipe)	Concentration (ug/100 sq. cm)
Aldrin	0.87
Dieldrin	BMDL
Heptachlor	0.04
Alpha-chlordane	0.15
Gamma-chlordane	0.38
PCBs	NA

WPS - 2I (insulation)	concentration (mg/kg) I
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	300
PCB - 1260	BMDL

WPS - 3D (dust)	Concentration (mg/kg)
Aldrin	100
Dieldrin	130
Heptachlor	7.5
Alpha-chlordane	20
Gamma-chlordane	43
PCBs	NA

WPS - 6D (dust)	Concentration (mg/kg)
Aldrin	BMDL
Dieldrin	67 E
Heptachlor	2.7
Alpha-chlordane	11
Gamma-chlordane	27 E
PCBs	NA

DUST SAMPLE

WIPE SAMPLE

OL OVERLAY SAMPLE TAKEN FROM SAME AREA AS ORIGINAL SAMPLE

A REPLICATE SAMPLE TAKEN DIRECTLY ADJACENT TO ORIGINAL SAMPLE

INSULATION SAMPLE
F - FOIL BACKING
I - INTERMEDIATE LAYER
R - ADJACENT TO ROOF

BMDL BELOW METHOD DETECTION LIMIT

E ESTIMATED VALUE CONCENTRATION EXCEEDS CALIBRATION RANGE OF THE GC/ECD

NA NOT ANALYZED FOR THE CONSTITUENT

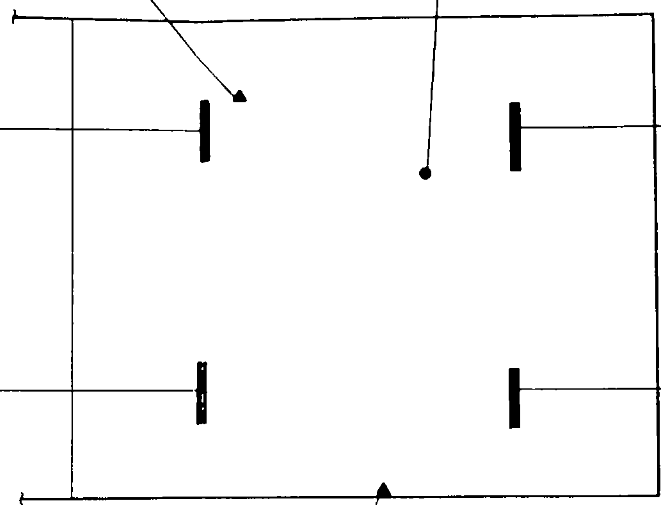
SCALE 1" = 50'

DICO INC.
DES MOINES, IOWA

FIGURE 2-6
DICO BUILDING 4
(SAMPLE BUILDING B)

6836 2/92

ECKENFELDER INC. Nashville, Tennessee Mahwah, New Jersey



WPF - 1 (Insulation)	concentration (mg/kg)		
	F	I	R
Aldrin	NA	NA	NA
Dieldrin	NA	NA	NA
Heptachlor	NA	NA	NA
Alpha-chlordane	NA	NA	NA
Gamma-chlordane	NA	NA	NA
PCB - 1254	29,000	340	160
PCB - 1260	BMDL	BMDL	BMDL

WPF - [illegible] (wipe)	Concentration (ug/100 sq. cm)
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	BMDL
PCB - 1260	BMDL

WPF - 1D (dust)	Concentration (mg/kg)
Aldrin	7.8
Dieldrin	5
Heptachlor	2.4
Alpha-chlordane	4.5
Gamma-chlordane	6.6
PCBs	NA

WPF - 2D (dust)	Concentration (mg/kg)
Aldrin	16
Dieldrin	4
Heptachlor	1.6
Alpha-chlordane	4.9
Gamma-chlordane	8.4
PCBs	NA

WPF - 4D (dust)	Concentration (mg/kg)
Aldrin	59
Dieldrin	6.9
Heptachlor	1.6
Alpha-chlordane	6.3
Gamma-chlordane	6.6
PCBs	NA

WPF - 3D (dust)	Concentration (mg/kg)
Aldrin	10
Dieldrin	3.2
Heptachlor	1.3
Alpha-chlordane	8.7
Gamma-chlordane	5.8
PCBs	NA

WPF - [illegible] (insulation)	concentration (mg/kg)
	I
Aldrin	NA
Dieldrin	NA
Heptachlor	NA
Alpha-chlordane	NA
Gamma-chlordane	NA
PCB - 1254	200
PCB - 1260	BMLA

DUST SAMPLE

WIPE SAMPLE

OL OVERLAY SAMPLE TAKEN FROM SAME AREA AS ORIGINAL SAMPLE

A REPLICATE SAMPLE TAKEN DIRECTLY ADJACENT TO ORIGINAL SAMPLE

INSULATION SAMPLE
F - FOIL BAKING
I - INTERMEDIATE LAYER
R - ADJACENT TO ROOF

BMDL BELOW METHOD DETECTION LIMIT

NA NOT ANALYZED FOR THE CONSTITUENT

SCALE 1"= 50'

DICO INC.
DES MOINES, IOWA

FIGURE 2-7
DICO BUILDING 5
(SAMPLE BUILDING F)

6836 2/92

ECKENFELDER INC. Nashville, Tennessee Mahwah, New Jersey

Wipe samples were collected during the first investigation to assess the presence/absence of residual pesticides in buildings on relatively smooth nonporous surfaces. Wipe samples were collected on relatively smooth nonporous surfaces during the third investigation to assess the presence/absence of PCBs in the buildings. The PCB investigation focused on determining possible sources of PCBs (i.e., insulation, adhesive in insulation, oil spills, etc.). The procedures for collecting wipe samples were described in the two work plans and included delineating a 10 cm by 10 cm area with a template and wiping the area with hexane soaked gauze pads and placing them in glass jars and sealed.

Dust samples were collected during the first investigation to assess the presence/absence of residual pesticides in dust in certain buildings known to contain former operations involving pesticides. Dust samples were collected during the second investigation to assess the presence/absence of residual pesticides in dust in all six buildings in order to determine the areas where pesticides were present. Dust samples were collected using dedicated scoopulas and sealed glass jars. Dust collected in Buildings 1 and 2 during the second investigation was generally less than 1/8 inch thick, white powder was not visually observed, and was sparsely spread over beams. As such, the dust was scraped over long (beam) surface areas approximately ranging between 4 and 10 feet. Insufficient dust was available in the northwest quadrant of Building 2 (because the area had been previously cleaned to remove asbestos) so an insulation sample was collected. Dust in Buildings 3, 4, 5, and the Maintenance Building was visually different (a white or gray powder, generally thicker than 1/8 inch) scraping was limited to a smaller length to obtain the sample because dust was more plentiful, particularly in Building 5.

Insulation materials were sampled for the purposes of evaluating the presence/absence of PCBs in the material and the possible distribution of PCBs within the material. Foil backing samples were analyzed to evaluate the adhesive as a potential source of PCBs and intermediate and roof layers were analyzed to determine if another potential source was present and to evaluate distribution within the material.

Measures were taken during the field investigation activities and laboratory analyses to maintain the integrity of the samples as well as data generated from them. Field Quality Assurance/Quality Control (QA/QC) measures included:

- Wipe replicates
- Wipe overlays
- Trip Blanks
- Equipment Blanks

Laboratory QA/QC procedures were conducted in strict accordance with EPA Contract Laboratory Program (CLP) QA/QC protocol. Laboratory QA/QC measures includes method blank samples performed on each matrix (e.g., dust, wipe, and insulation) for each separate sampling event.

Twelve (12) samples consisting of wipe replicates, wipe overlays, and blanks were collected for the three sampling events to satisfy field QA/QC requirements.

A wipe replicate is a sample collected immediately adjacent to the area of the original sample. The replicate locations were chosen such that they were visually similar to the original sample with respect to the type of medium, degree of apparent discoloration, age, etc. Two replicate wipes were collected during the September 1991 sampling event and an additional two replicate wipes were collected during the January 1992 sampling event. Replicate sample identifications contain an "A" following the location number.

A wipe overlay is a sample taken directly over the same area as the original sample. The purpose for performing overlays is to evaluate the efficiency of the wipe sampling procedure. Two overlays were collected in September 1991 and an additional two overlays were collected during the January 1992 sampling event. Overlay sample identifications contain an "OL" following the location number.

Trip blanks consisted of a wipe sample container with hexane and gauze pad prepared in the laboratory. The container was opened in the field, the gauze removed and replaced, and the sample analyzed with the rest of the samples submitted to the laboratory. One trip blank was collected and analyzed for the January 1992 sampling event.

Equipment blanks consisted of wipes performed on the stainless steel templates used during the collection of regular wipe samples. The purpose for analyzing equipment blanks is to determine whether or not possible cross contamination between locations occurred. Two equipment blanks were collected during the September 1991 sampling event and one equipment blank was collected in January 1992.

Method blanks are samples prepared and analyzed in the laboratory as part of laboratory QA/QC. The purpose for method blanks is to identify and evaluate the effect that any possible laboratory contamination has on the investigative samples. Three method blanks were performed during the September 1991 analyses, one method blank was performed during the November 1991 analyses, and two method blanks were performed during the January 1992 sample analyses.

All samples were initially analyzed in the laboratory at a "low level" concentration range. Samples in which an analyte was detected in concentrations that exceeded the upper limit of the low level range were diluted and re-analyzed at a higher level concentration, or re-analyzed at a higher level without being diluted. Quantitation limits for the diluted samples were increased as a result of dilution. All dilutions were performed in accordance with CLP protocols.

2.3.2 Results

The analytical results are presented in Tables 2-1 through 2-4 and on Figures 2-3 through 2-7. All laboratory data sheets are included in Appendix B. The analyses indicated the presence of pesticides in all six building interiors. Dust samples were collected and analyzed for the presence of pesticides in all six buildings. The highest dust concentration (520,000 ppm aldrin) was found in the aldrin tank room in the Maintenance Building. Wipe samples from Buildings 3 and 4 and the Maintenance Building all indicated the presence of pesticides. The highest concentration (117 μg/100 sq cm aldrin) was found in the aldrin tank room in the Maintenance Building. Wipe samples taken from Buildings 1, 2 and 5 were not analyzed for pesticides.

Wipe and insulation samples were collected and analyzed for the presence of PCBs in all six buildings. Laboratory analyses indicated the presence of PCBs in ceiling insulation in Buildings 2, 3, 4, and 5 and the Maintenance Building. Building 1 samples did not indicate the presence of PCBs in the roofing materials. No insulation existed in the ceiling of this building. Also, wall insulation samples taken in Buildings 3, 4, and 5 indicated the presence of PCBs. The highest concentration (29,000 ppm Aroclor 1254) was found in the ceiling insulation in Building 5. Wipe samples analyzed for PCBs in all six buildings indicated concentrations below method detection limit except for one floor wipe (and an overlay wipe) taken in Building 4. The concentrations of Aroclor 1254 detected were 35 μg/100 sq cm and 25 μg/100 sq cm, respectively.

Field and laboratory QA/QC sample results are as follows. Both replicate wipe samples collected in September 1991 indicate that a consistent presence or absence of the five pesticides analyzed for existed. WPA-1 and WPA-1A samples both contained concentrations of all five pesticides, but measured concentrations of aldrin, dieldrin, alpha chlordane, and gamma chlordane in WPA-1 were higher than in WPA-1A. WPB-2 and WPB-2A both contained concentrations of aldrin, heptachlor, alpha chlordane, and gamma chlordane, but did not contain dieldrin. Measured concentrations of the four pesticides in both WPB-2 and WPB-2A were similar. All wipe and wipe replicate samples (WPD-11, WPD-11A, WPC-15, and WPC-15A) collected in January 1992 indicate the same results (Below Method Detection Limit) for PCBs.

Two wipe overlay samples were taken in September 1991. Wipe overlay WPA-30L yielded higher concentrations of all five pesticides than the original sample (WPA-3). Wipe overlay WPC-80L indicated a high efficiency of removal in comparison to the original sample (WPC-8). All five pesticides were present in WPC-8 and only aldrin was detected in WPC-80L. Two wipe overlay samples were taken in January 1992. Wipe overlay WPB-140L yielded a lower concentration of PCBs than the original sample (WPB-14). The other overlay (WPC-150L) yielded a BMDL result for PCBs, as did the original sample.

The trip blank included as part of the January 1992 investigation yielded a result of BMDL as did the equipment blank and the equipment blanks included as part of the September 1991 investigation.

All six method blanks prepared and analyzed in the laboratory yielded BMDL results except the method blank analyzed as part of the dust samples collected in

September 1991. All pesticides in this blank were BMDL except aldrin which was detected at 22 μg/kg.

Based on the results, it appears that residual pesticides are present in areas of all six buildings with the higher concentrations associated with an area adjacent to the former aldrin tank. In areas where pesticides were detected, concentrations vary, but tend to be higher in areas associated with former pesticide operations. Because pesticide operations ceased in 1970, pesticide concentrations present are expected to be the result of previous operations.

The quantitative presence of PCBs found in the buildings appears to be only in the wall and ceiling insulation contained in the buildings, except for one area in Building 4. The only other indication of PCBs were the qualitative identification of PCBs found in dust samples located close to the ceiling insulation itself in Building Nos. 1, 2, 4 and 5. The wipe sample in Building 4 which indicated a relatively low concentration of PCBs is located below a portion of the roof where some insulation had deteriorated and fallen to the floor. According to DICO, the roof in this area leaked and damaged insulation prior to installation of the new roof. Some insulation was repaired at that time. Therefore, the insulation damage likely occurred prior to installation of the second roof in Building 4. Based on the wipe samples, no further presence of PCBs was found in the buildings.

The liner panels, either metal or aluminum foil (fabric), appear to contain the PCBs within the insulation and higher PCB concentrations appeared in the fabric lined insulation as compared to the metal lined insulation. In most cases, PCB concentrations were greater closer to the fabric rather than in the center of the insulation or in insulation abutting the metal deck portion of the roof. This indicates that the potential source of PCBs may be related to the adhesive used to secure the insulation to the foil/fabric.

All wipe samples analyzed for PCBs which were taken from various surfaces including floors and structural steel, contained concentrations below method detection limit except one sample discussed previously which contained a relatively low concentration of PCBs (WPB-14, 35 $\mu g/100\ cm^2$). Sampling efforts support the conclusion that insulation materials (adhesive) are the source of PCBs. The qualitative presence of PCBs was identified in dust samples collected very close to the ceiling, oftentimes close to areas where insulation had been disturbed. Since the floor wipe sample in Building 4 was taken below an area of previous roof damage and a low PCB concentration was detected, the detection of PCBs at significant concentrations is not expected.

2.3.3 Further Investigations

An air monitoring program will be conducted in Buildings 1 and 2 to assess possible pesticide and/or PCB concentrations in the air in these two buildings. Four air samples will be analyzed for pesticides and four samples will be analyzed for PCBs. This sampling effort is currently being scheduled in coordination with DICO plant personnel. No air samples will be collected in the other buildings which are currently vacant.

Pesticide concentrations in dust and wipe samples are highest in the former aldrin tank annex. Access to this annex has been prevented for a long period of time and at the request of USEPA, remedial measures associated with the tank, annex, and surrounding soils are currently being evaluated and documented in a separate report.

3.0 IDENTIFICATION AND EVALUATION OF ACTION ALTERNATIVES

3.1 PESTICIDES IN BUILDING INTERIORS

As determined by three investigations, dust and wipe samples indicate the presence of pesticides in the interior of six buildings associated with the former DiChem operations. Residual concentrations are believed to be associated with former DiChem operations which ceased in 1970. The highest concentrations are located in areas where former pesticide operations reportedly occurred. The following alternatives have been developed and evaluated related to the presence of pesticides in the buildings. A separate report addresses the former aldrin tank, annex, and surrounding soils.

3.1.1 Alternative 1 - Vacuum Building Interiors

This alternative would involve vacuuming all of the loose material in the buildings. Health and safety trained personnel would use High Efficiency Particulate Air (HEPA) vacuums to remove dust from the ceilings, walls, floors, heavy equipment, piping, light fixtures, and other material that is either fixed in the building or determined to be too impracticable to move. Any warehoused material in Building 2 would have to be moved to accomplish a thorough vacuuming process. Particulate material collected in the vacuum would be containerized, characterized, and transported off site for disposal. The work would be conducted under a site-specific health and safety plan which would include engineering controls, decontamination protocols, and specific air monitoring requirements. Engineering controls would be implemented to prevent contaminant migration during cleanup. Also, measures will be taken to prevent damage to building insulation. If damage does occur immediate repairs will be made. Repair measures may include securely taping small holes or removal and replacement of panels. Any panels removed will require proper off-site disposal. Upon completion of the vacuuming, surface wipe samples and air samples would be collected and analyzed and compared to previous samples to determine the effectiveness of pesticide removal. Visual methods would be used to measure performance. During vacuuming, some chipping may be required to remove material which may have solidified and adhered to surfaces.

Off-site disposal options for the solid waste material include disposal in a RCRA permitted hazardous waste landfill or commercial incineration. Incineration appears to be available and a permitted facility is located in Coffeyville, Kansas. Material to be drummed and incinerated would include the dust, filters, workers' personal protective equipment, possible damaged insulation, and other contaminated disposable tools and equipment associated with the project.

This vacuuming alternative would reduce the threat to human health and the environment by removal of dust containing pesticides. However, some of the pesticide residue has adhered to surfaces in solid cake-like formations. Chipping could remove the pesticides prior to vacuuming and an inventory would be conducted of the surfaces to assure that they are adequately addressed.

A well-coordinated schedule of operations would need to be developed. Approximately 10 to 12 weeks would be required to develop a construction bid package and solicit bids. Given adequate access to buildings, the estimated construction time associated with the vacuum alternative is 6 to 8 weeks (including mobilization and demobilization), assuming the work would be performed in 40-hour work weeks. Total time for the project (between bid package development and completion) would be 16 to 20 weeks.

The estimated order of magnitude cost estimate for the project is $360,000. Further detail supporting this cost estimate is included in Appendix C. The cost estimate includes material, labor, supervision, engineering, construction oversight, legal fees, confirmatory sampling, and a contingency. No costs associated with regulatory oversight have been included and labor costs are based on a 40-hour straight time work week.

3.1.2 Alternative 2 - Vacuum and Wash Building Interiors

This alternative would first involve development of a health and safety plan, vacuuming the building interiors as described in the previous alternative, and then washing the interior building surfaces. Surfaces to be vacuumed and washed would include floors, ceilings, structural steel framing, walls, piping, light fixtures, ceiling fans, and other equipment determined not feasible to move.

A surfactant might be added to the wash water to facilitate ease of removal of residual material from surfaces. Washing with a high pressure water laser would be performed, as feasible, to clean building surfaces, except for surfaces which could be easily damaged such as the exposed ceiling and wall insulation in most of the buildings. These areas may need to be hand washed and any insulation disturbed by the remedial activities would have to either be repaired or insulation would have to be removed and replaced. Removed insulation would be properly disposed. Spent wash water would be removed by vacuum truck or barrel vacuums suitable for liquids and then stored or treated.

It may be feasible and cost effective to treat spent wash water with a temporary on-site treatment system and reuse the wash water. The system, if appropriate, could significantly reduce the volume of waste to be disposed of. Treatment of water containing pesticides would likely include separation, flocculation/clarification, multimedia filtration, and liquid phase carbon adsorption. Final treated spent water would be discharged to the POTW (pending POTW approval) after analyses, and spent carbon and other waste solids would be containerized, characterized, and disposed of off site along with the dry vacuum waste material. If on-site treatment of wash water is not feasible, then off-site disposal as a hazardous waste may be required for most or all of the spent wash water. Spent wash water, if not recycled and instead, disposed of off site, may result in a quantity of waste in excess of 200,000 gallons. Upon completion of the vacuuming and washing, surface wipe and air samples would be collected and analyzed and compared to previous samples to determine the effectiveness of pesticide removal.

A pilot program in one of the buildings would be conducted to determine the appropriate level of effort related to washing. Also, the effectiveness of on-site treatment would be investigated. A limited bench-scale or pilot program would likely determine the suitability of on-site water treatment.

The vacuum and wash alternative may provide increased protection of human health and the environment, but due to the relatively low concentrations of pesticides found in most of the wipe samples, washing may not provide additional protection. Vacuuming alone, along with chipping and scraping hardened material prior to vacuuming may provide the same protection.

This cleaning program would require more resources than a vacuuming program. The same coordination of work will be required; however, building washing would increase the time of remediation and more care would need to be taken to ensure that building insulation is not damaged during washing and that all wash water is efficiently collected. Conducting a pilot program prior to implementation of the full-scale vacuum and wash program would allay concerns associated with implementation, effectiveness, disposal, and unanticipated costs. Upon completion of this program it is estimated that 10 to 12 weeks would be required to complete the vacuuming and washing. Development of a construction bid package, soliciting bids, and conducting the pilot program would take at least 15 to 18 weeks. Accordingly, total project time would be 25 to 30 weeks.

The estimated order of magnitude cost for this alternative is $908,000 if all areas within the building are washed. As per the cost estimate for vacuuming, engineering and construction oversight overheads have been included, but not regulatory oversight. Also, the cost was developed based on one wash being required. If additional washes are required, then costs would increase.

3.1.3 Alternative 3 - Vacuum and Selectively Wash Building Interiors

This alternative would first involve development of a health and safety plan, vacuuming the building interiors as described in the previous alternative, and then selectively washing any interior building surfaces which contain residual material not removed by vacuuming (and possibly chipping). Surfaces to be vacuumed would include floors, ceilings, structural steel framing, walls, piping, light fixtures, ceiling fans, and other equipment determined not feasible to move. Surfaces to be washed would include limited areas where chipping followed by vacuuming would not remove the material. These areas, if they exist, can only be delineated during the action.

A surfactant might be added to the wash water to facilitate ease of removal of residual material from surfaces. Washing would likely be performed by hand due to the limited areas to be washed. Spent wash water would be removed by vacuum truck or barrel vacuums suitable for liquids and then stored for ultimate off-site disposal. Due to the limited areas expected to require washing, the quantity of spent wash water should not be significant. Protection of insulation during vacuuming and washing would be as discussed previously under Alternatives 1 and 2. Upon completion of the vacuuming and selective washing, air and surface wipe samples would be collected to determine the effectiveness of the cleaning.

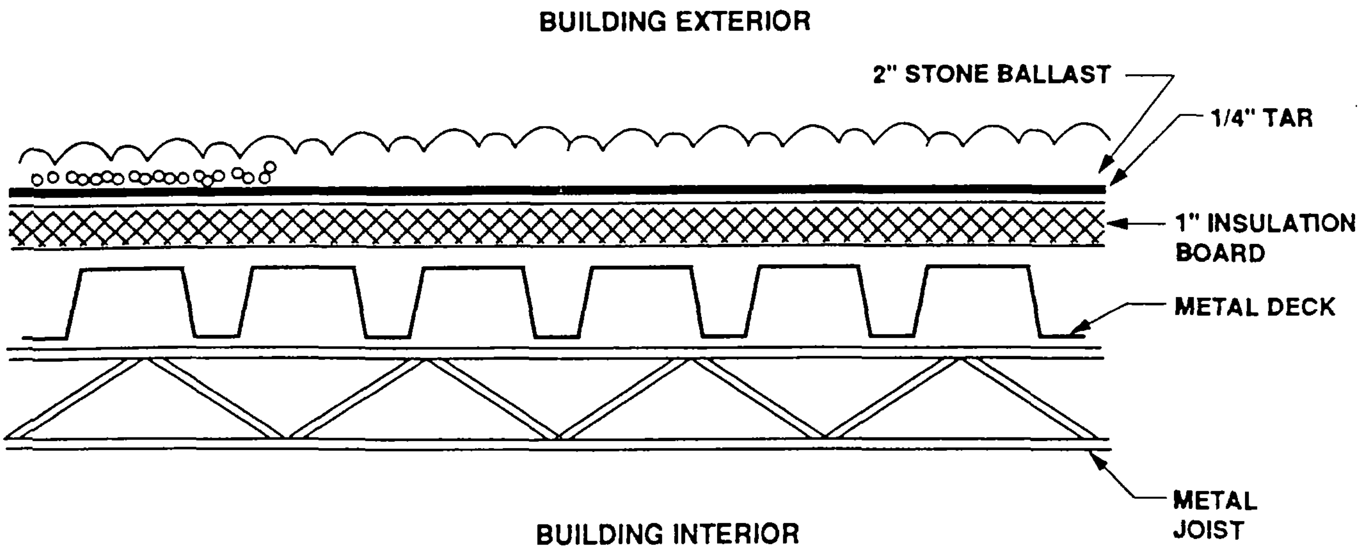
The vacuum and selective wash alternative may provide increased protection of human health and the environment than vacuuming alone.

This cleaning program would require the same coordination as the vacuuming program, but less coordination than the vacuum and full wash alternative. It is estimated that 6 to 8 weeks (including mobilization and demobilization) would be required to complete the vacuuming and selective washing, assuming the work would be performed in 40-hour work weeks. Development of a construction bid package and soliciting bids would take at least 10 to 12 weeks. Accordingly, the total project time would be 16 to 20 weeks.

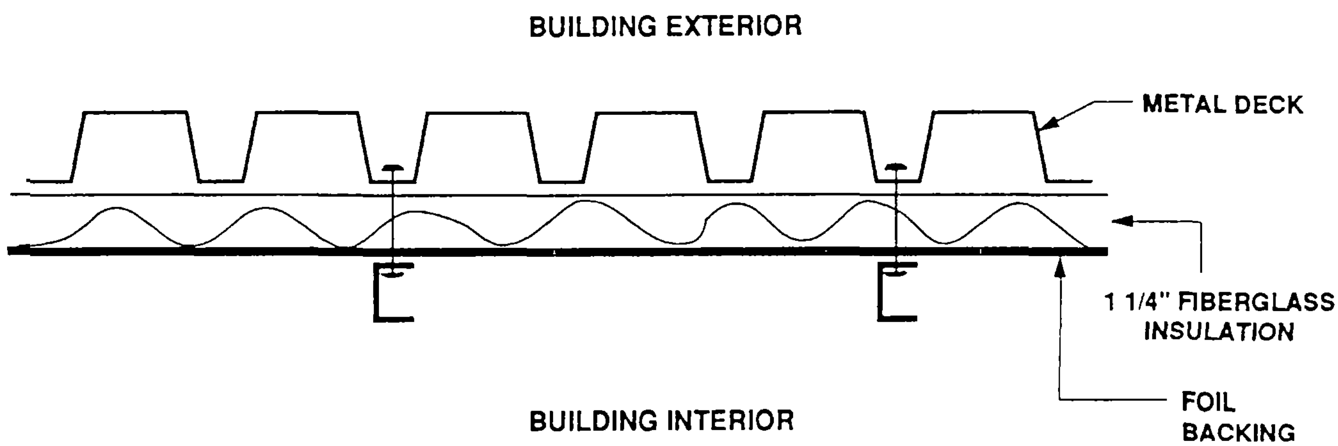
The estimated order of magnitude cost for this alternative is $402,000. As per the cost estimate for the other two alternatives, engineering and construction oversight overheads have been included, but not regulatory oversight. The cost was developed based on one selective wash event.

3.2 PCBs IN BUILDING INSULATION

During the investigations, insulation samples established the presence of PCBs in ceiling insulation in Buildings 2 through 5 and the Maintenance Building as well as in wall insulation in Buildings 3, 4, and 5. Insulation in the ceilings of the buildings was installed as part of the roof system. In Buildings 2, 3, 4, and 5, the foil/fabric lined ceiling insulation is sandwiched between the roof joists and the metal roof deck which is located above the insulation. Buildings 4 and 5 contain two roofs. In the Maintenance Building the ceiling insulation is sandwiched between the roof deck and a metal liner panel in the shop areas. A suspended ceiling separates the roof area in the office area of the Maintenance Building. Figures 3-1, 3-2, and 3-3 show typical roof sections associated with the various buildings. Wall insulation in these buildings is, for the most part, attached to columns and siding girts and is part of the building structure. Wall insulation in portions of some of the buildings and in all of the Maintenance Building is covered by a metal liner panel.



TYPICAL ROOF SECTION - BUILDING 1



TYPICAL ROOF SECTION - BUILDINGS 2 AND 3

NOTE: ROOF SECTIONS BASED ON VISUAL OBSERVATIONS AND INFORMATION OBTAINED FROM DICO INC. PERSONNEL. NO DRAWINGS WERE AVAILABLE.

NOT TO SCALE

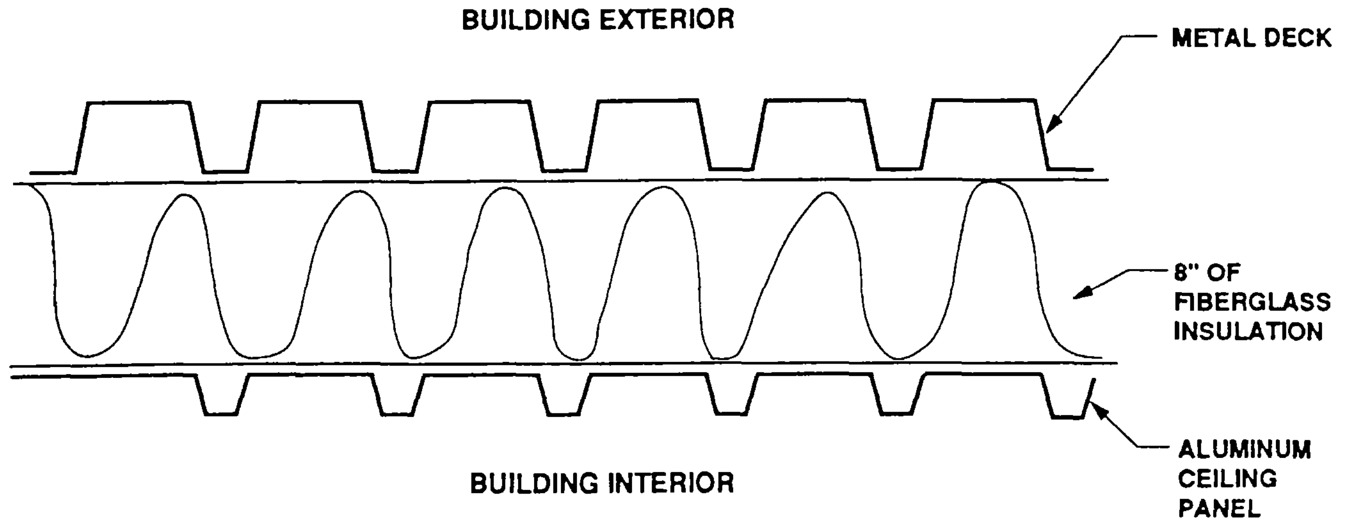
DICO INC.
DES MOINES, IOWA

FIGURE 3-1
TYPICAL ROOF SECTIONS
BUILDINGS 1, 2, AND 3

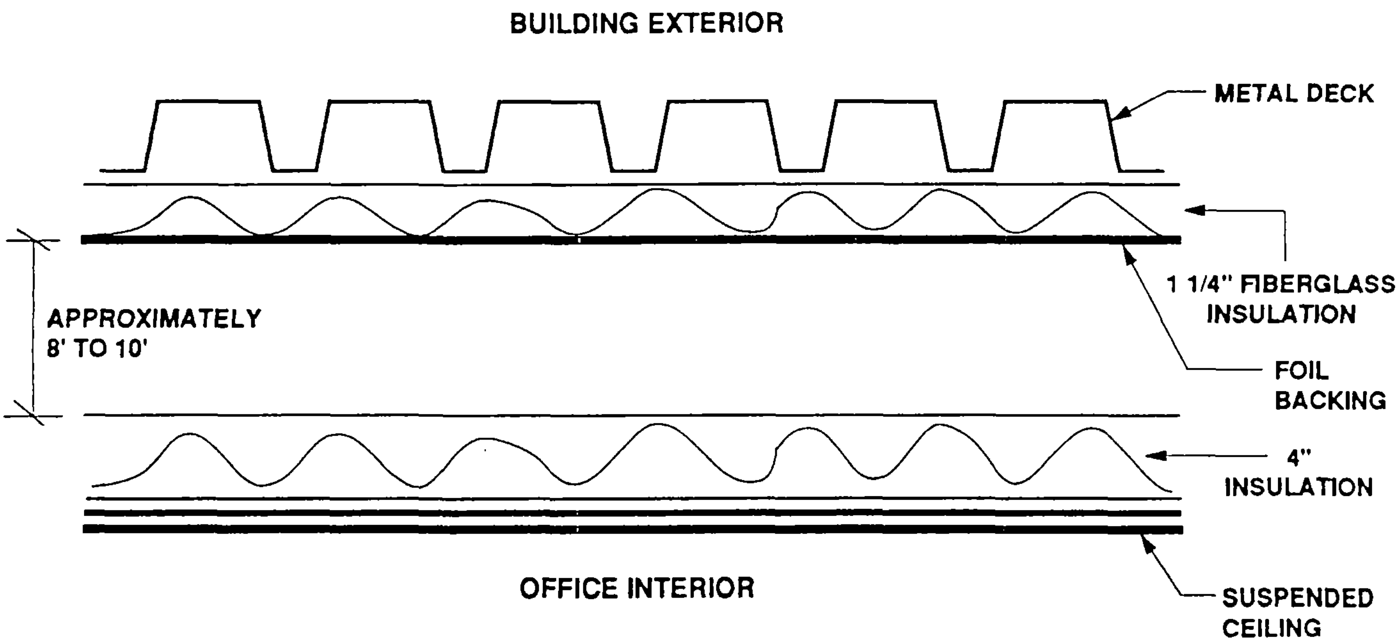
6836 3/92

ECKENFELDER INC.

Nashville, Tennessee
Mahwah, New Jersey
Rochester, New York



TYPICAL ROOF SECTION - MAINTENANCE BUILDING (SHOP AREA)



TYPICAL ROOF SECTION - MAINTENANCE BUILDING (OFFICE AREA)

NOTE: ROOF SECTIONS BASED ON VISUAL OBSERVATIONS AND INFORMATION OBTAINED FROM DICO INC. PERSONNEL. NO DRAWINGS WERE AVAILABLE.

NOT TO SCALE

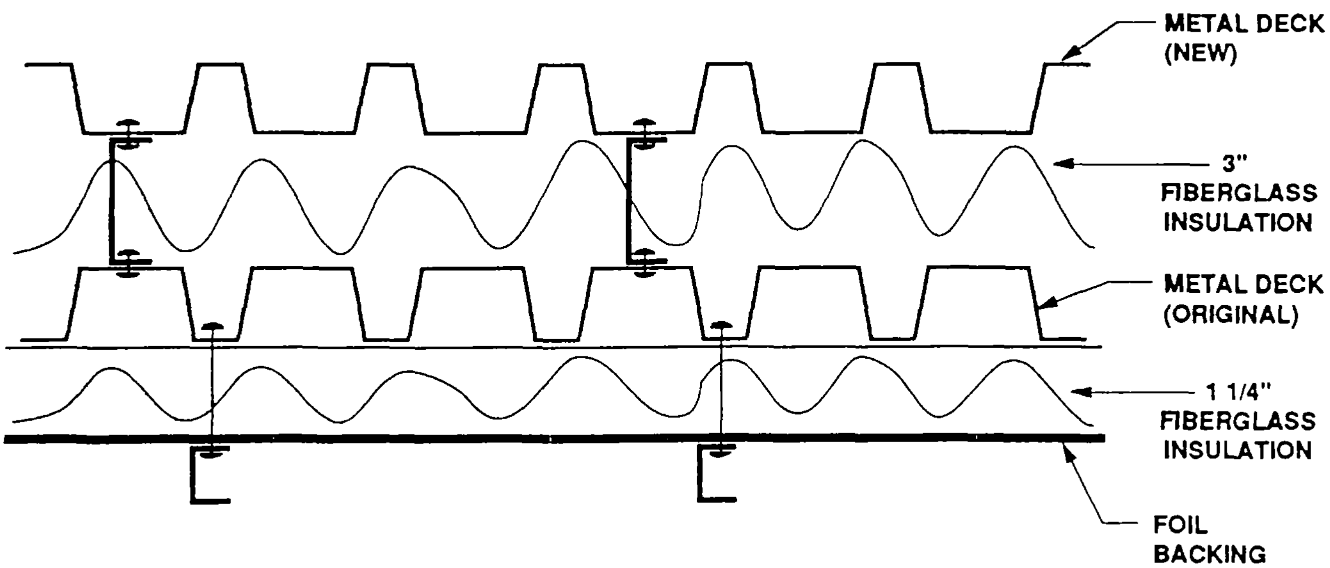
DICO INC.
DES MOINES, IOWA

FIGURE 3-2
TYPICAL ROOF SECTIONS
MAINTENANCE BUILDING

6836 3/92

ECKENFELDER INC.
Nashville, Tennessee
Mahwah, New Jersey
Rochester, New York

BUILDING EXTERIOR



BUILDING INTERIOR

TYPICAL ROOF SECTION -
BUILDINGS 4 AND 5

NOTE: ROOF SECTIONS BASED ON VISUAL OBSERVATIONS AND INFORMATION OBTAINED FROM DICO INC. PERSONNEL. NO DRAWINGS WERE AVAILABLE.

NOT TO SCALE

DICO INC.
DES MOINES, IOWA

FIGURE 3-3
TYPICAL ROOF SECTION
BUILDINGS 4 AND 5

6836 3/92

ECKENFELDER INC.
Nashville, Tennessee
Mahwah, New Jersey
Rochester, New York

As reported previously, the greatest concentrations of PCBs detected were located in foil fabric backing samples. No releases of PCBs can be confirmed related to the insulation (which is part of the structure of the buildings), except for one area in Building 4 where insulation in the ceiling likely fell to the floor when the roof leaked. The concentration of PCBs in this one wipe sample was relatively low (35 $\mu g/100\ cm^2$). Also, the leaking roof has been repaired and insulation is no longer likely to fall to the floor. A release or threat to human health or the environment related to the PCBs in the insulation has not been established.

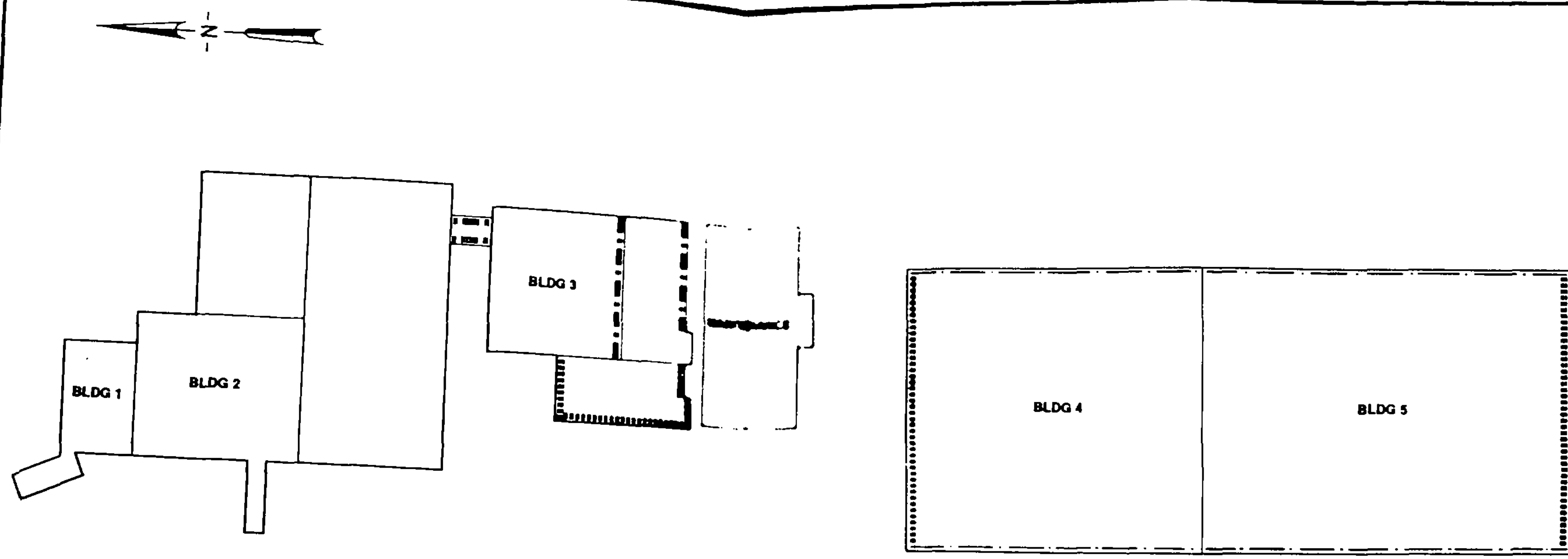
However, at the request of USEPA, the following alternative has been developed to address the PCBs in the wall and ceiling insulation.

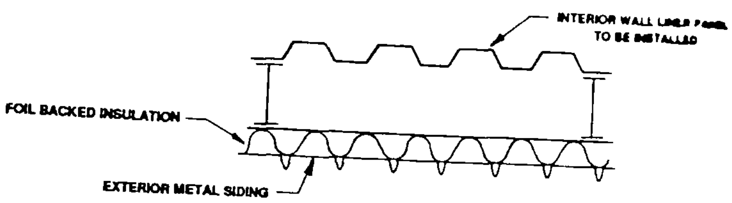
Ceiling Insulation Repair, Wall Insulation Protection, and Notice Arrangement

This alternative involves repairing damaged exposed ceiling insulation, installing engineering controls to prevent damage to existing exposed wall insulation, and developing a notice arrangement that would notify any building leasee or potential buyer that the PCB containing insulation existed in the buildings. Wall and ceiling insulation (if present) in Building 1 and the Maintenance Building is already protected by a metal liner panel. Exposed wall and/or ceiling insulation and insulation integrity in the other buildings varies and was discussed in Section 2.2.2. Figure 3-4 shows the extent of wall insulation requiring protection and a typical panel installation detail.

Exposed insulation ceiling repairs for the most past would involve placing heavy adhesive tape over small tears and holes. A few panels of ceiling insulation (primarily in Building 4) have been damaged more extensively so removal and replacement may be appropriate. Proper off site disposal of any waste PCB containing insulation would be required, however, the quantity of waste material is expected to be quite small and would be minimized. Workers who conduct the repairs would have to be properly trained in health and safety.

Wall insulation extends from floor to ceiling in some areas, and partially covers walls in other areas. Wall insulation would be covered with thin sheet metal panels. Minor electrical and mechanical equipment relocations would be required to





TOP VIEW OF TYPICAL WALL LINER PANEL SECTION

Approximate Quantity of New Wall Panel

Building 1	None
Building 2	None
Walkway Between Building 2 and 3	[illegible] sq. ft.
Building 3	6,000 sq. ft.
Maintenance Building	None
Building 4 & 5	19,[illegible] sq. ft.

LEGEND

- WALL LINER PANEL TO BE INSTALLED FROM FLOOR TO FULL HEIGHT OF BUILDING
- WALL LINER PANEL TO BE INSTALLED ABOVE EXISTING PANEL (APPROX. 4' ABOVE FLOOR TO FULL HEIGHT OF BUILDING)
- WALL LINER PANEL TO BE INSTALLED ABOVE EXISTING PANEL (APPROX. 10' ABOVE FLOOR TO FULL HEIGHT OF BUILDING)

NOT TO SCALE

DICO INC.
DES MOINES, IOWA

FIGURE 3-4
TYPICAL WALL LINER PANEL PLAN AND SECTION

6836 7/92

ECKENFELDER INC.
Nashville, Tennessee
Mahwah, New Jersey
Rochester, New York

facilitate installation of the new panels. Existing building structural framing would provide anchorage for the panels to the extent possible (Figure 3-4). Few additional supplemental anchor locations are expected to be required.

Upon completion of the repairs and installation of the protective wall panels, air monitoring would be conducted to assess conditions within the buildings. Depending on the results of air monitoring, periodic monitoring might continue in the future to ensure that releases of PCBs have not occurred. A routine inspection and repair schedule will also be developed to identify and repair any potential tears expeditiously.

Installation of the wall panels would prevent human contact with wall insulation and would protect the insulation from potential damage associated with activities within the buildings. Future potential human exposure to the ceiling, once ceiling insulation repairs are completed, would be limited. Monitoring, inspection, and maintenance activities would ensure continued protection. A notice arrangement for potential leasees and buyers would provide notification that the PCBs exist in the insulation and that protection against a potential release via tears or other damage must be maintained.

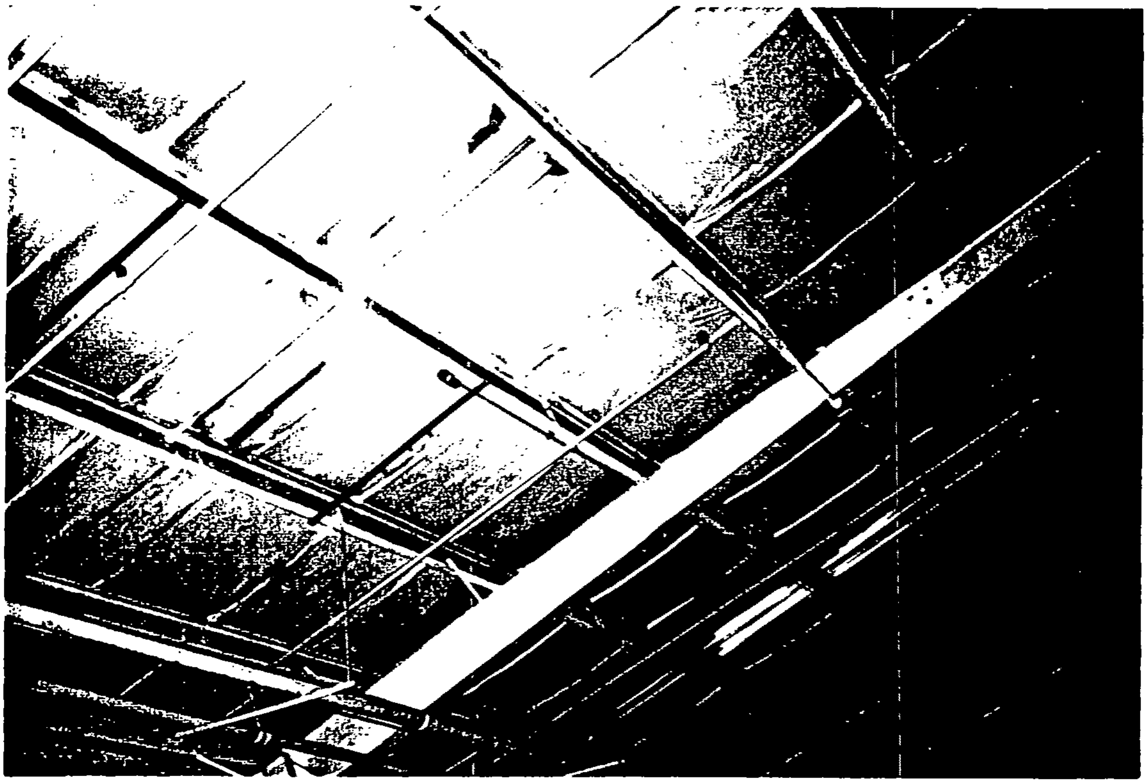
Repairing the damaged ceiling insulation should not be difficult. Installation of the wall liner panels would be moderately difficult since the existing insulation is a part of the structure and was not designed to have a liner panel. Panels will have to be anchored on the inside face of the structural frame and may require relocation of electrical/mechanical items to facilitate installation. Also, a slight decrease in available floor space will occur since panels will extend beyond the structural framing. A well coordinated schedule of operations would need to be developed. Approximately six to eight weeks would be required to develop a construction bid package and solicit bids. Given adequate access to the buildings and timely removal of warehoused material and equipment, the estimated construction time associated with this alternative is 6 to 8 weeks (including mobilization and demobilization), assuming the work would be performed in 40-hour work weeks. Total time for the project (between bid package development and completion) would be dependent on the regulatory agency review and approval process.

The estimated order of magnitude cost estimate for the project is $188,000. Further detail supporting this cost estimate is included in Appendix C. The cost estimate includes material, labor, supervision, engineering, construction oversight, legal fees, air monitoring upon completion, and a contingency. No costs associated with regulatory oversight have been included and labor costs are based on a 40-hour straight time work week.

APPENDIX A

INTERIOR BUILDING
CEILING AND WALL INSULATION PHOTOGRAPHS

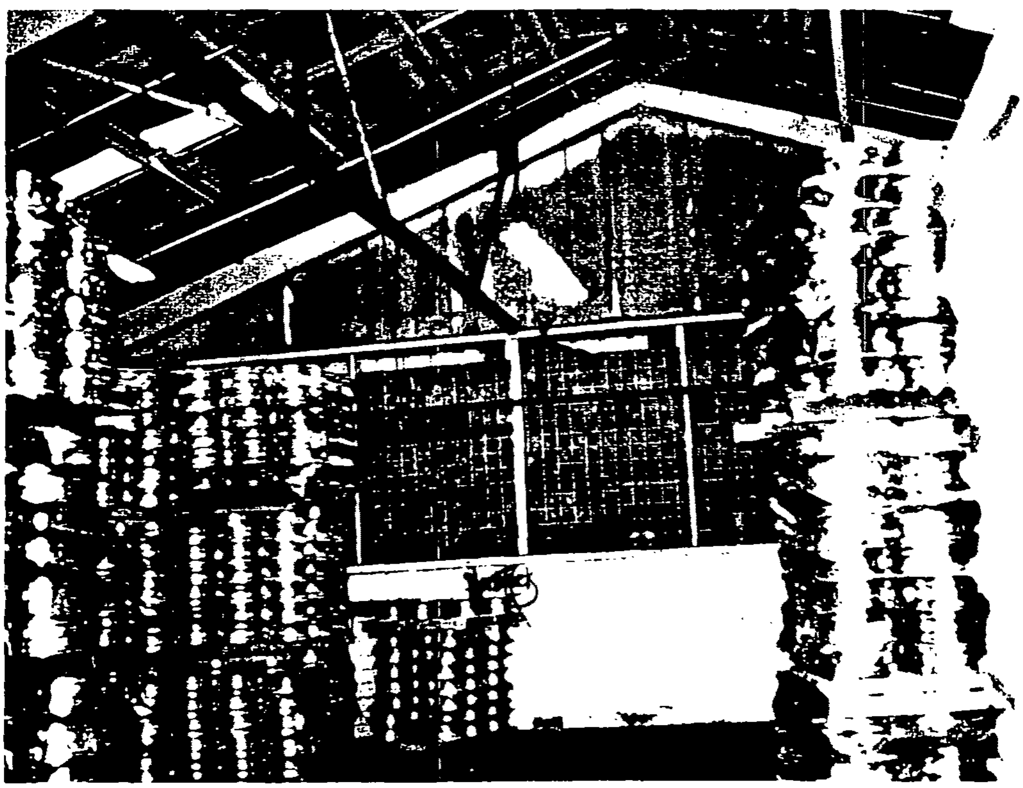
Q:\6836\MAR92\02C.836



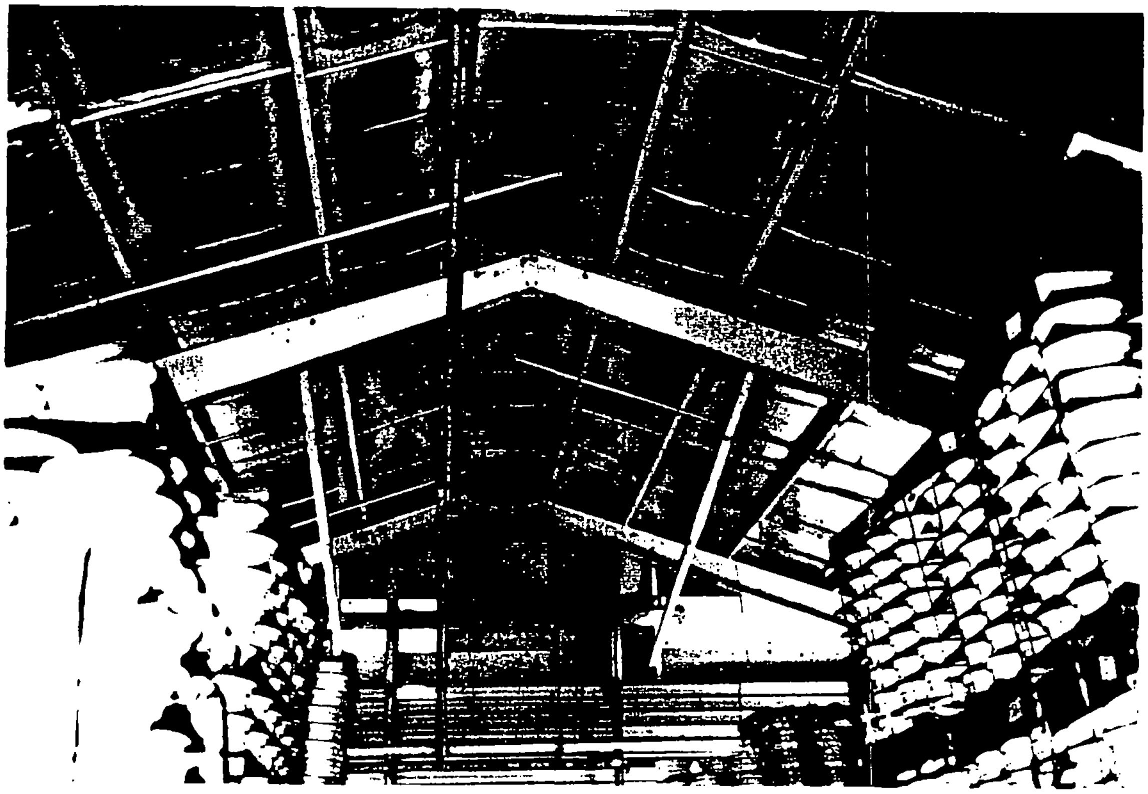
1 - BUILDING NO. 2, NORTHWEST QUADRANT CEILING INSULATION (TYPICAL)

2 - BUILDING NO. 2, NORTHEAST QUADRANT CEILING INSULATION (TYPICAL)

3 - BUILDING NO 2, SOUTHEAST AREA CEILING - TORN INSULATION AREA

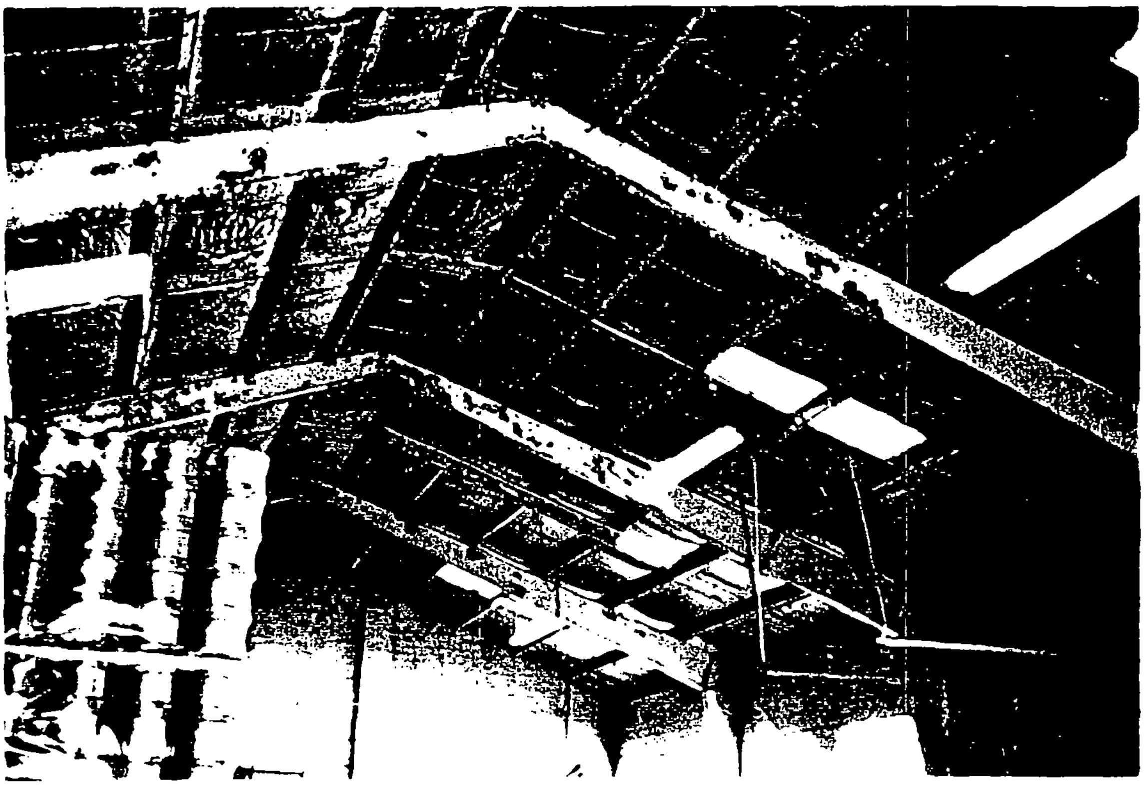


4 - BUILDING NO 2, INSULATION INSTALLED IN NORTH WALL OF SOUTH ROOM



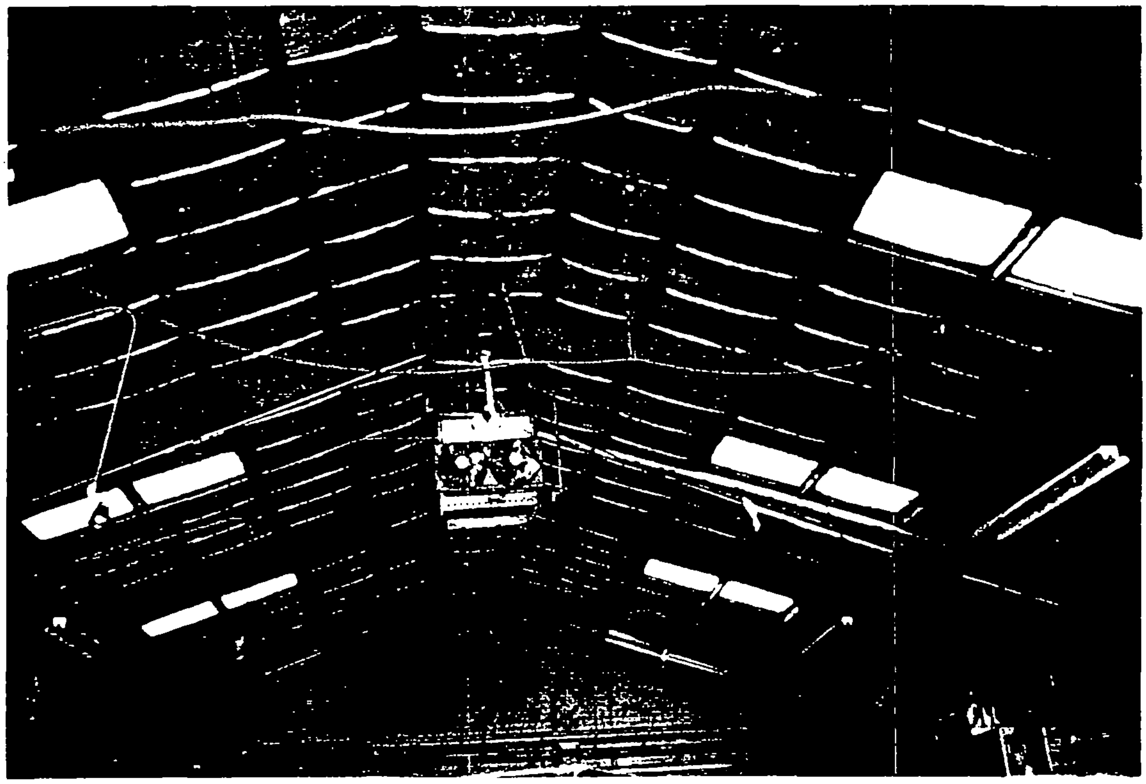
5 - BUILDING NO 2, SOUTHWEST AREA CEILING INSULATION (TYPICAL)

6 - WALKWAY BETWEEN BLDG. 2 AND BLDG. 3, WALL INSULATION (TYPICAL)



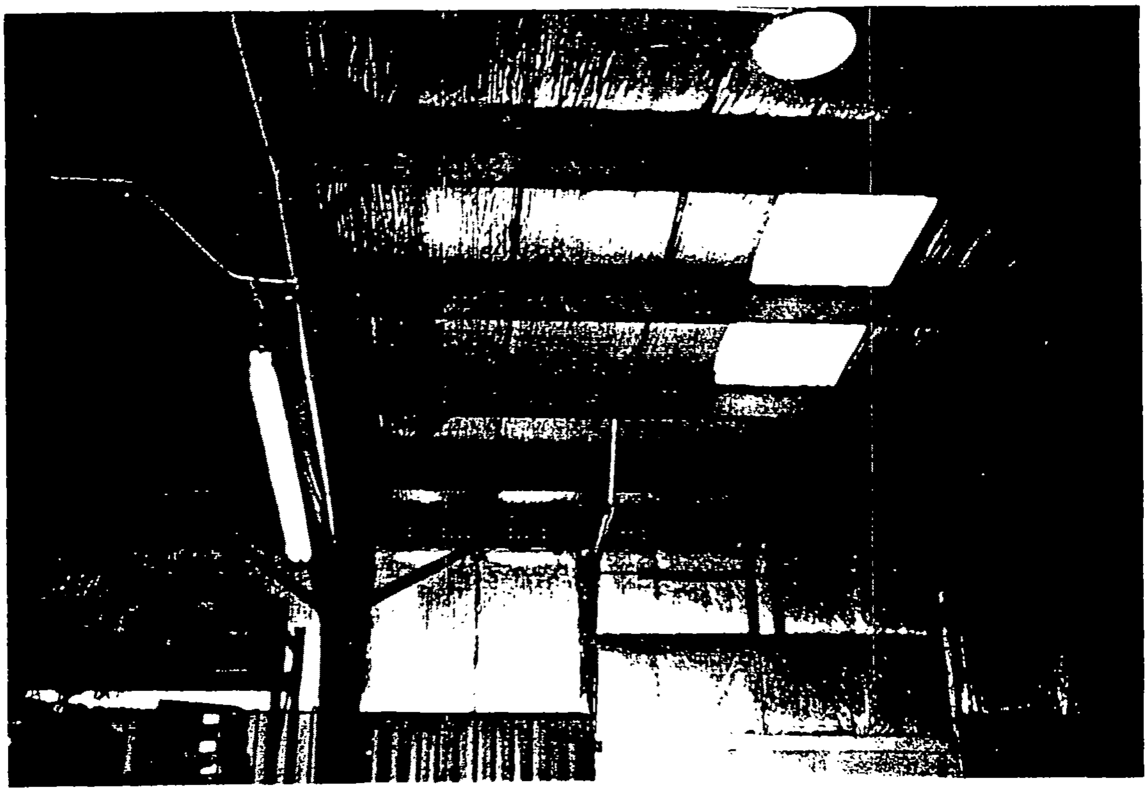
7 - BUILDING NO 3, NORTH ROOM CEILING INSULATION AND CHIPPED PAINT (TYPICAL)

8 - BUILDING NO 3, NORTH ROOM WALL INSULATION ON SOUTH WALL (TYPICAL)

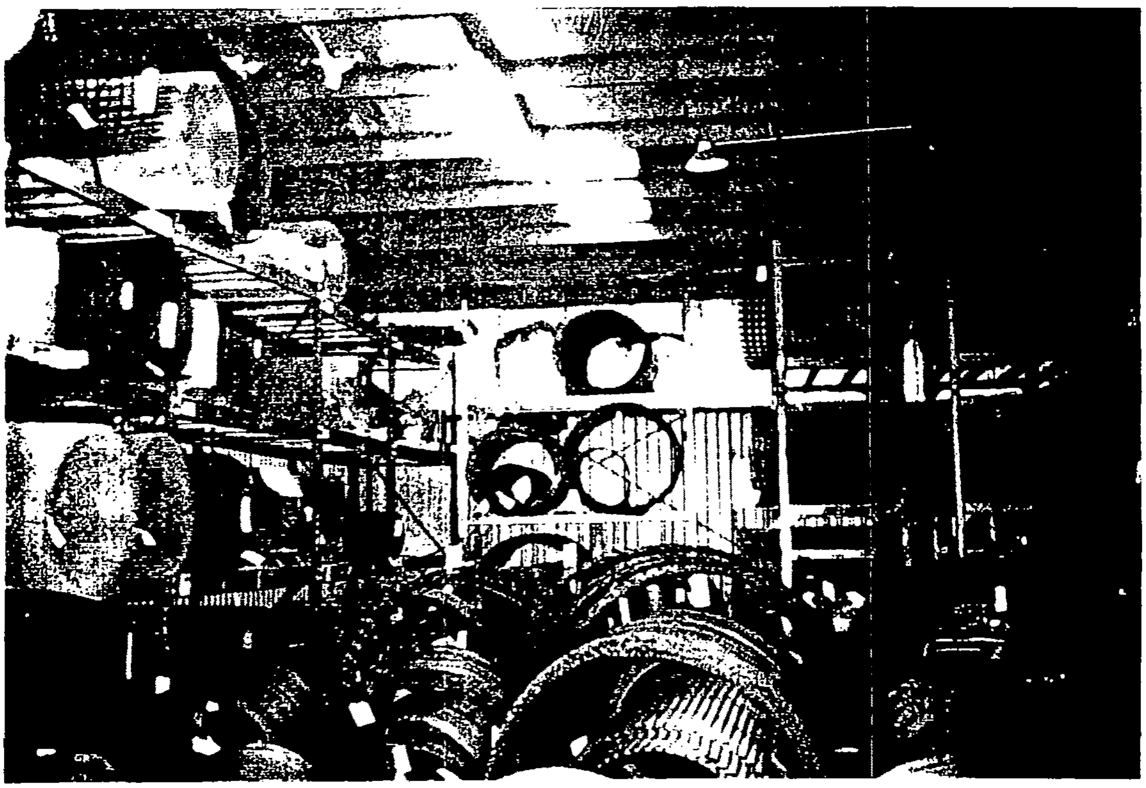


9 - BUILDING NO 3, SOUTH ROOM CEILING INSULATION (TYPICAL)

10 - BUILDING NO 3, SOUTH ROOM SOUTH WALL INSULATION (TYPICAL)



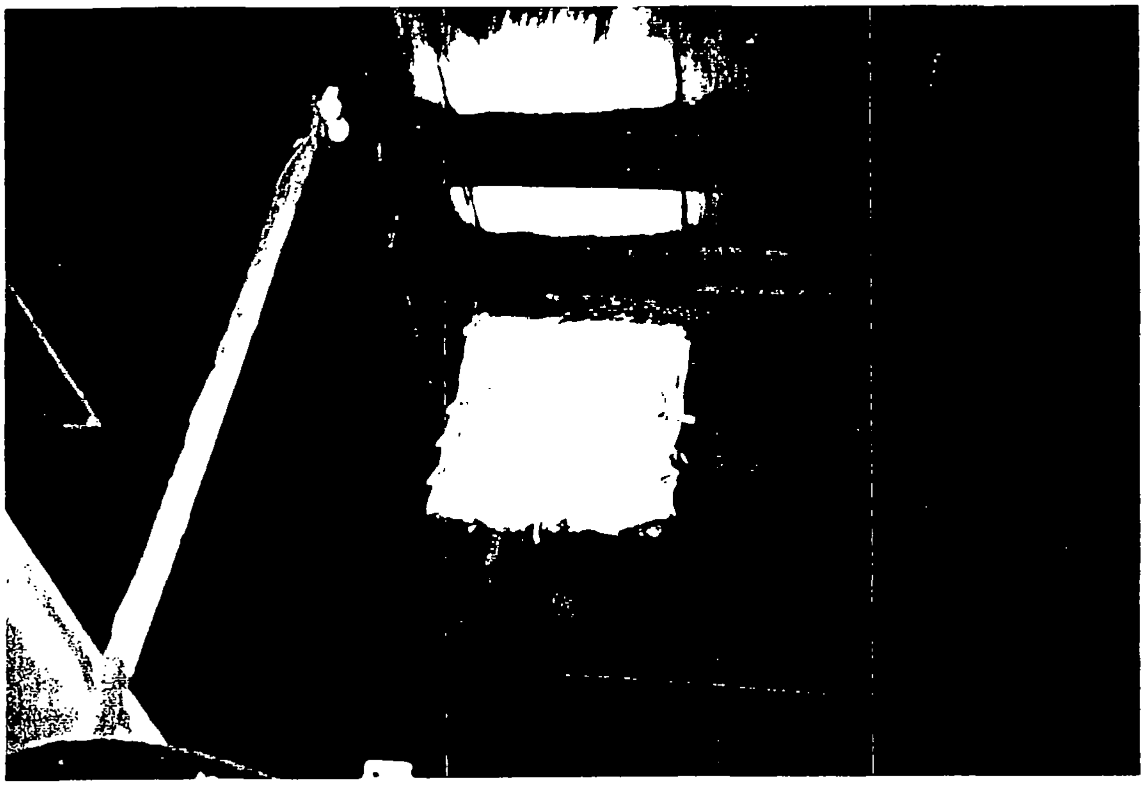
11 - BUILDING NO 3, WEST ANNEX, SOUTH WALL AND CEILING INSULATION (TYPICAL)



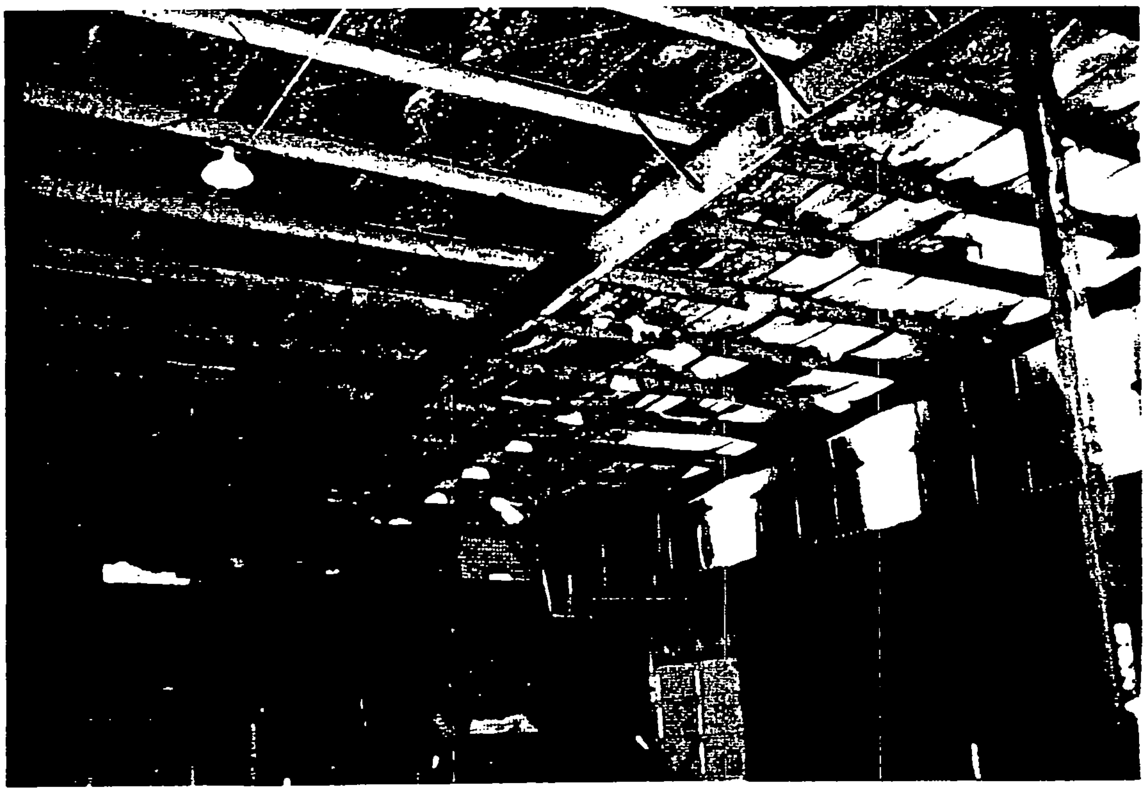
12 - BUILDING NO 3, WEST ANNEX, NORTH WALL WITH INSULATION DAMAGE DUE TO EQUIPMENT IN THE AREA

13 - BUILDING NO 4, CEILING INSULATION

14 - BUILDING NO 4, WALL INSULATION (TYPICAL)

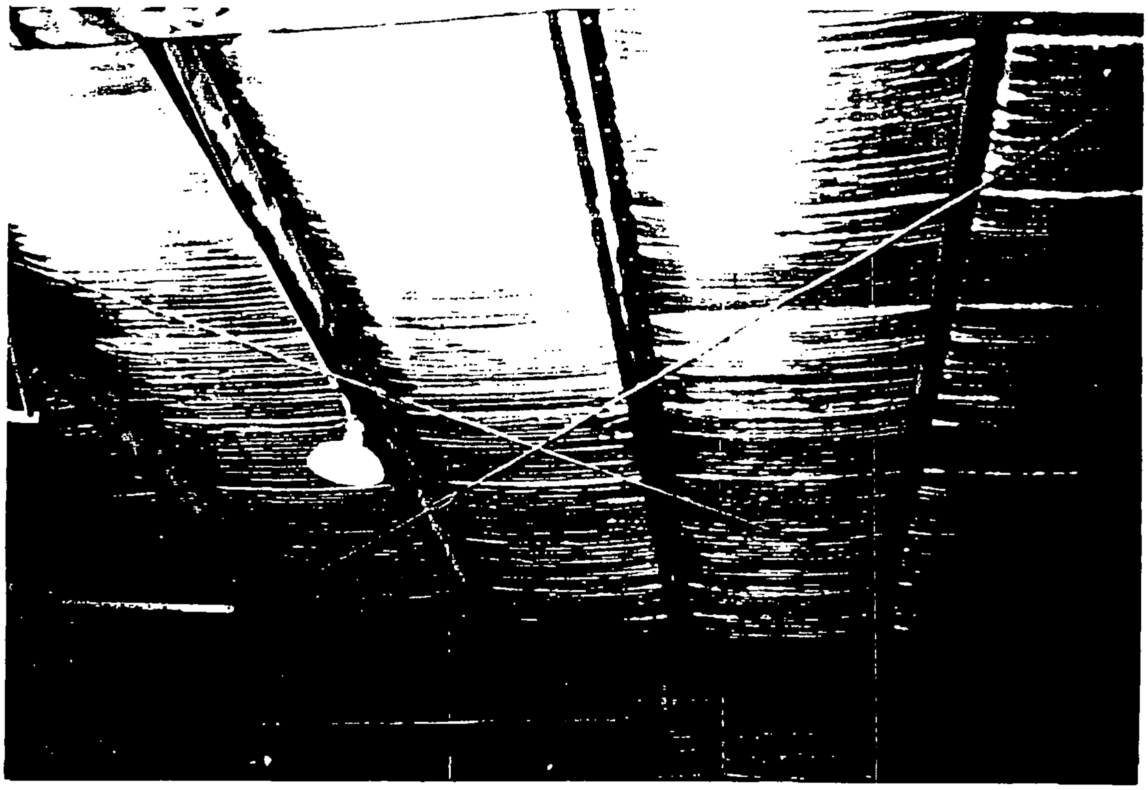


15 - BUILDING NO 4, AREA OF DISTURBED CEILING INSULATION



16 - BUILDING NO 4, NORTH PORTION OF CEILING INSULATION THAT IS DISTURBED

17 - BUILDING NO 5, WALL INSULATION (TYPICIAL)



18 - BUILDING NO 5, CEILING INSULATION (TYPICAL)

APPENDIX B

LABORATORY RESULTS SUMMARY TABLES

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595

DATE SAMPLED: 9/03/91

DATE RECEIVED: 9/05/91

DATE REPORTED: 10/11/91

DATE REVISED: 2/18/92

ECKENFELDER SAMPLE NUMBER		5579	5580	5581	5582	5583
CLIENT SAMPLE DESCRIPTION "WIPES"		WPA-1	WPA-1A	WPA-3	WPA-30L	WPA-4
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
ALDRIN	0.01	67	46.5	0.14	21.8	117
DIELDRIN	0.02	12.7	1.24	0.13	0.15	9.62
HEPTACHLOR	0.01	0.10	0.10	0.02	0.04	0.34
ALPHA CHLORDANE	0.01	4.25	0.82	0.08	0.36	5.13
GAMMA CHLORDANE	0.01	4.95	0.93	0.11	0.34	4.88

ALL RESULTS EXPRESSED IN ug/100 cm2

227 French Landing Drive
Nashville, Tennessee 37228
615.255.2288
FAX 615.256.8332

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595

DATE SAMPLED: 9/03/91
DATE RECEIVED: 9/05/91
DATE REPORTED: 10/11/91
DATE REVISED: 2/18/92

ECKENFELDER SAMPLE NUMBER		5584	5585	5586	5587	5588
CLIENT SAMPLE DESCRIPTION "WIPES"		WPA-5	WPA-6	WPA-7	WPA-11	WPB-1
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
ALDRIN	0.01	1.74	0.28	0.07	0.01	0.67
DIELDRIN	0.02	0.40	0.38	0.21	BMDL	BMDL
HEPTACHLOR	0.01	0.04	0.02	0.01	BMDL	0.04
ALPHA CHLORDANE	0.01	0.56	0.28	0.09	BMDL	0.15
GAMMA CHLORDANE	0.01	0.54	0.29	0.13	BMDL	0.39

ALL RESULTS EXPRESSED IN ug/100 cm2

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 9/03/91
DATE RECEIVED: 9/05/91
DATE REPORTED: 10/11/91
DATE REVISED: 2/18/92

ECKENFELDER SAMPLE NUMBER		5589	5590	5591	5592	5593
CLIENT SAMPLE DESCRIPTION "WIPES"		WPB-2	WPB-2A	WPC-2	WPC-4	WPC-11
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
ALDRIN	0.01	0.23	0.11	0.40	0.02	BMDL
DIELDRIN	0.02	BMDL	BMDL	0.53	BMDL	BMDL
HEPTACHLOR	0.01	0.01	0.01	0.11	BMDL	BMDL
ALPHA CHLORDANE	0.01	0.06	0.03	0.60	0.02	BMDL
GAMMA CHLORDANE	0.01	0.14	0.08	0.76	0.03	BMDL

ALL RESULTS EXPRESSED IN ug/100 cm2

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595

DATE SAMPLED: 9/04/91

DATE RECEIVED: 9/05/91

DATE REPORTED: 10/11/91

DATE REVISED: 2/18/92

ECKENFELDER SAMPLE NUMBER		5594	5595	5596	5597	5598
CLIENT SAMPLE DESCRIPTION *WIPES*		WPB-4	WPB-7	WPB-8	WPB-9	WPC-5
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	10X (1) CONC	CONC	CONC	CONC	CONC
ALDRIN	0.01	12.9	0.17	0.19	0.18	0.65
DIELDRIN	0.02	BMDL	BMDL	BMDL	BMDL	BMDL
HEPTACHLOR	0.01	0.49	0.03	0.01	0.01	0.17
ALPHA CHLORDANE	0.01	10.8	0.05	0.06	0.05	1.03
GAMMA CHLORDANE	0.01	18.2	0.13	0.20	0.17	1.15

ALL RESULTS EXPRESSED IN ug/100 cm2

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED, DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 9/04/91
DATE RECEIVED: 9/05/91
DATE REPORTED: 10/11/91
DATE REVISED: 2/18/92

ECKENFELDER SAMPLE NUMBER		5599	5600	5601	5602	5603
CLIENT SAMPLE DESCRIPTION "WIPES"		WPC-7	WPC-8	WPC-80L	WPC-9	WPC-10
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
ALDRIN	0.01	0.50	69.8	0.02	0.80	0.87
DIELDRIN	0.02	BMDL	3.38	BMDL	0.41	0.47
HEPTACHLOR	0.01	0.06	0.20	BMDL	0.09	0.07
ALPHA CHLORDANE	0.01	0.23	2.38	BMDL	0.45	0.35
GAMMA CHLORDANE	0.01	0.28	2.44	BMDL	0.53	0.38

ALL RESULTS EXPRESSED IN ug/100 cm2

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 9/04/91
DATE RECEIVED: 9/05/91
DATE REPORTED: 10/11/91
DATE REVISED: 2/18/92

ECKENFELDER SAMPLE NUMBER		5604	
CLIENT SAMPLE DESCRIPTION "WIPES"		WPB-10	METHOD BLANK
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC
ALDRIN	0.01	0.03	BMDL
DIELDRIN	0.02	0.03	BMDL
HEPTACHLOR	0.01	BMDL	BMDL
ALPHA CHLORDANE	0.01	0.01	BMDL
GAMMA CHLORDANE	0.01	0.03	BMDL

ALL RESULTS EXPRESSED IN ug/100 cm2

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

D. R. D.

D. RICK DAVIS
VICE PRESIDENT/ANALYTICAL & TESTING SERVICES

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 9/03/91, 9/04/91
DATE RECEIVED: 9/05/91
DATE REPORTED: 10/11/91

ECKENFELDER SAMPLE NUMBER		5605	5606	5607	5608	5609
CLIENT SAMPLE DESCRIPTION "DUST"		WPA-2D	WPC-1D	WPC-3D	WPA-8D	WPA-9D
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	2000X (1) CONC	100X (1) CONC	200X (1) CONC	200X (1) CONC	CONC
ALDRIN	5.0	520,000,000 E	11,000	220,000	12,000	11,000
DIELDRIN	10	8,800,000	19,000 E	1,000,000 E	BMDL	23,000
HEPTACHLOR	5.0	BMDL	BMDL	3,800	1,700	750
ALPHA CHLORDANE	5.0	BMDL	6,700	BMDL	14,000	8,000
GAMMA CHLORDANE	5.0	40,000	13,000	17,000	17,000	8,700

ALL RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM, AS RECEIVED.

BMDL = BELOW METHOD DETECTION LIMIT

E = ESTIMATED VALUE, CONCENTRATION EXCEEDS
CALIBRATION RANGE OF THE GC/ECD.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

227 French Landing Drive
Nashville, Tennessee 37228
615.255.2288
FAX 615.256.8332

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 9/04/91
DATE RECEIVED: 9/05/91
DATE REPORTED: 10/11/91

ECKENFELDER SAMPLE NUMBER		5610	5611	5612	5613
CLIENT SAMPLE DESCRIPTION "DUST"		WPA-10D	WPB-3D	WPB-5D	WPB-6D
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	100X (1) CONC	1000X (1) CONC	1000X (1) CONC	200X (1) CONC
ALDRIN	5.0	13,000	100,000	BMDL	BMDL
DIELDRIN	10	33,000	130,000	200,000 E	57,000 E
HEPTACHLOR	5.0	820	7,500	5,300	2,700
ALPHA CHLORDANE	5.0	12,000	20,000	26,000	11,000
GAMMA CHLORDANE	5.0	13,000	43,000	45,000	27,000 E

ALL RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM, AS RECEIVED.

BMDL = BELOW METHOD DETECTION LIMIT

E = ESTIMATED VALUE, CONCENTRATION EXCEEDS CALIBRATION RANGE OF THE GC/ECD.

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED, DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595

DATE SAMPLED: 9/04/91

DATE RECEIVED: 9/05/91

DATE REPORTED: 10/11/91

ECKENFELDER SAMPLE NUMBER		5614	
CLIENT SAMPLE DESCRIPTION "DUST"		WPC-6D	METHOD BLANK
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	200X (1) CONC	CONC
ALDRIN	5.0	9,700	22
DIELDRIN	10	14,000	BMDL
HEPTACHLOR	5.0	5,500	BMDL
ALPHA CHLORDANE	5.0	9,500	BMDL
GAMMA CHLORDANE	5.0	12,000	BMDL

ALL RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM, AS RECEIVED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED, DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

ECKENFELDER INC.

D. RICK DAVIS

VICE PRESIDENT/ANALYTICAL & TESTING SERVICES

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 11/25/91
DATE RECEIVED: 11/27/91
DATE REPORTED: 12/16/91

ECKENFELDER SAMPLE NUMBER		8591	8592	8593	8594
CLIENT SAMPLE DESCRIPTION "DUST"		WPD-1D	WPD-2D	WPD-3D	WPD-4D
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	200X (1) CONC	200X (2) CONC	100X (2) CONC	200X (2) CONC
ALDRIN	5.0	BMDL	17000	15000	37000
DIELDRIN	10	BMDL	63000	27000	59000
HEPTACHLOR	5.0	BMDL	5700	1800	2300
ALPHA CHLORDANE	5.0	BMDL	5500	3200	3500
GAMMA CHLORDANE	5.0	BMDL	11000	4400	4700

RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM AS RECEIVED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = DETECTION LIMITS SHOULD BE INCREASED BY THE NUMERICAL VALUE DISPLAYED. PCB (AROCLOR 1254) ESTIMATED AT 1000 MILLIGRAMS/KILOGRAM.

(2) = DETECTION LIMITS SHOULD BE INCREASED BY THE NUMERICAL VALUE DISPLAYED. QUALITATIVE IDENTIFICATION OF PCB (AROCLOR 1254) SHOULD BE NOTED.

227 French Landing Drive
Nashville, Tennessee 37228
615.255.2288
FAX 615.256.8332

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595

ATE SAMPLED: 11/25/91

ATE RECEIVED: 11/27/91

DATE REPORTED: 12/16/91

CKENFELDER SAMPLE NUMBER		8595	8596	8597	8598	8599
CLIENT SAMPLE DESCRIPTION "DUST"		WPD-5D	WPD-6D	WPD-7D	WPD-8D	WPE-1D
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	200X (2) CONC	100X (2) CONC	25X (2) CONC	25X (2) CONC	10X (2) CONC
ALDRIN	5.0	11000	4700	4800	2600	390
DIELDRIN	10	16000	4800	7300	7300	11000E
HEPTACHLOR	5.0	2400	680	1200	940	510
ALPHA CHLORDANE	5.0	3600	840	1600	1900	2400
GAMMA CHLORDANE	5.0	4900	1300	2700	2900	1700

RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM AS RECEIVED.

= ESTIMATED VALUE, CONCENTRATION EXCEEDS CALIBRATION RANGE OF THE GC/ECD.

) = DETECTION LIMITS SHOULD BE INCREASED BY THE NUMERICAL VALUE DISPLAYED. QUALITATIVE IDENTIFICATION OF PCB (AROCLOR 1254) SHOULD BE NOTED.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
ATE SAMPLED: 11/25/91, 11/26/91
ATE RECEIVED: 11/27/91
DATE REPORTED: 12/16/91

ECKENFELDER SAMPLE NUMBER		8600	8601	8602	8603	8604
CLIENT SAMPLE DESCRIPTION "DUST"		WPE-2D	WPF-1D	WPF-2D	WPF-3D	WPF-4D
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	CONC	200X (2) CONC	100X (2) CONC	200X (2) CONC	25X (2) CONC
ALDRIN	5.0	40	7600	16000	10000	59000
DIELDRIN	10	190	5000	4000	3200	6900
HEPTACHLOR	5.0	40	2400	1600	1300	1600
ALPHA CHLORDANE	5.0	180	4500	4900	5700	6300
GAMMA CHLORDANE	5.0	160	6600	6400	5900	8600

RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM AS RECEIVED.

(2) = DETECTION LIMITS SHOULD BE INCREASED BY THE NUMERICAL VALUE DISPLAYED. QUALITATIVE IDENTIFICATION OF PCB (AROCLOR 1254) SHOULD BE NOTED.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6595
DATE SAMPLED: 11/26/91
DATE RECEIVED: 11/27/91
DATE REPORTED: 12/16/91

ECKENFELDER SAMPLE NUMBER		8605	8606	8607	
CLIENT SAMPLE DESCRIPTION "DUST"		WPB-11D	WPB-12D	WPB-13D	METHOD BLANK
PESTICIDE COMPOUNDS BY USEPA METHOD 8081	DETECTION LIMITS	200X (2) CONC	100X (2) CONC	100X (2) CONC	CONC
ALDRIN	5.0	68000	8400	9200	BMDL
DIELDRIN	10	31000	12000	23000	BMDL
HEPTACHLOR	5.0	1500	1300	1200	BMDL
ALPHA CHLORDANE	5.0	13000	5800	9200	BMDL
GAMMA CHLORDANE	5.0	21000	7700	10000	BMDL

RESULTS EXPRESSED IN MICROGRAMS/KILOGRAM AS RECEIVED.

BMDL = BELOW METHOD DETECTION LIMITS

(2) = DETECTION LIMITS SHOULD BE INCREASED BY THE NUMERICAL VALUE DISPLAYED. QUALITATIVE IDENTIFICATION OF PCB (AROCLOR 1254) SHOULD BE NOTED.

ECKENFELDER INC.

D. Rick Davis

D. RICK DAVIS
VICE PRESIDENT/ANALYTICAL & TESTING SERVICES

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/30/92
DATE RECEIVED: 1/31/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		705	708	707	708	709
CLIENT SAMPLE DESCRIPTION		WPE-1I	WPF-1F	WPF-1I	WPF-1R	WPB-1F
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	500X (1) CONC	10X (1) CONC	10X (1) CONC	50X (1) CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	29000*	340	160	2700
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

* = CONFIRMED BY GC/MS

227 French Landing Drive
Nashville, Tennessee 37228
615.255.2288
FAX 615.256.8332

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836

DATE SAMPLED: 1/30/92
DATE RECEIVED: 1/31/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		710	711	712	713	714
CLIENT SAMPLE DESCRIPTION		WPB-1I	WPB-1R	WPA-1I	WPA-1R	WPC-3F
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	10X (1) CONC	10X (1) CONC	5X (1) CONC	5X (1) CONC	5X (1) CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	210	250	67	110	38 E
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

E = ESTIMATED VALUE DUE TO SAMPLE MATRIX.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/30/92
DATE RECEIVED: 1/31/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		715	716	717	718	719
CLIENT SAMPLE DESCRIPTION		WPC-3I	WPC-3R	WPC-2F	WPC-2I	WPC-2R
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	500X (1) CONC	50X (1) CONC	50X (1) CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	BMDL	15000*	1800*	1400
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED, DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

* = CONFIRMED BY GC/MS

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/30/92
DATE RECEIVED: 1/31/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		720	721	722	723	724
CLIENT SAMPLE DESCRIPTION		WPC-1F	WPC-1I	WPC-1R	WPD-1F	WPD-1I
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	5X (1) CONC	CONC	CONC	500X (1) CONC	10X (1) CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	BMDL	BMDL	14000*	410
PCB-1260	5.0	170	7.5	12	BMDL	BMDL

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

* = CONFIRMED BY GC/MS

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836

DATE SAMPLED: 1/30/92

DATE RECEIVED: 1/31/92

DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		725	726	727	728	729
CLIENT SAMPLE DESCRIPTION		WPD-1R	WPD-9D	WPD-2F	WPD-2I	WPD-2R
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	5X (1) CONC	5X (1) CONC	25X (1) CONC	10X (1) CONC	5X (1) CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	350	230	2000	840	640
PCB-1260	5.0	BMDL	BMDL	800	160	27

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/30/92, 1/31/92
DATE RECEIVED: 1/31/92, 2/03/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		730	731	732	820	821
CLIENT SAMPLE DESCRIPTION		WPD-3F	WPD-3I	WPD-3R	WPB-2I	WPC-4I
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	500X (1) CONC	5X (1) CONC	5X (1) CONC	5X (1) CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	9600	140	120	300	BMDL
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	22

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/31/92
DATE RECEIVED: 2/03/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		824	826	833	835	
CLIENT SAMPLE DESCRIPTION		WPB-31	WPF-21	WPC-51	WPC-61	METHOD BLANK
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	10X (1) CONC	5X (1) CONC	5X (1) CONC	5X (1) CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	250	200	160	38	BMDL
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MILLIGRAMS/KILOGRAM
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

(1) = SAMPLES WERE DILUTED BY THE NUMERICAL VALUE DISPLAYED,
DETECTION LIMITS SHOULD INCREASE BY THE SAME FACTOR.

ECKENFELDER INC.

D. Rick Davis

D. RICK DAVIS
VICE PRESIDENT/ANALYTICAL & TESTING SERVICES

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/30/92
DATE RECEIVED: 1/31/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		733	734	735	736	737
CLIENT SAMPLE DESCRIPTION		WPE-3	WPE-4	WPD-10	WPD-11	WPD-11A
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MICROGRAMS/100 cm2
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

227 French Landing Drive
Nashville, Tennessee 37228
615.255.2288
FAX 615.256.8332

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/30/92, 1/31/92
DATE RECEIVED: 1/31/92, 2/03/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		738	739	740	741	822
CLIENT SAMPLE DESCRIPTION		WPD-12	WPD-13	WPD-14	WPD-15	WPB-14
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	BMDL	BMDL	BMDL	35
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MICROGRAMS/100 cm2
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836

DATE SAMPLED: 1/31/92

DATE RECEIVED: 2/03/92

DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		823	825	827	828	829
CLIENT SAMPLE DESCRIPTION		WPB-140L	WPF-5	WPA-11	WPA-12	WPA-13
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	25	BMDL	BMDL	BMDL	BMDL
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MICROGRAMS/100 cm2
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836
DATE SAMPLED: 1/31/92
DATE RECEIVED: 2/03/92
DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		830	831	832	834	836
CLIENT SAMPLE DESCRIPTION		WPC-11	WPC-12	WPC-13	WPC-14	WPC-15
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MICROGRAMS/100 cm2
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

CLIENT: DICO COMPANY, INC. #6836

DATE SAMPLED: 1/31/92

DATE RECEIVED: 2/03/92

DATE REPORTED: 2/18/92

ECKENFELDER SAMPLE NUMBER		837	838	839	840	
CLIENT SAMPLE DESCRIPTION		WPC-15A	WPC-150L	EQUIPMENT BLANK	TRIP BLANK	METHOD BLANK
PCB'S BY USEPA METHOD 8081	DETECTION LIMITS	CONC	CONC	CONC	CONC	CONC
PCB-1016	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1221	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1232	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1242	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1248	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1254	5.0	BMDL	BMDL	BMDL	BMDL	BMDL
PCB-1260	5.0	BMDL	BMDL	BMDL	BMDL	BMDL

ALL RESULTS EXPRESSED IN MICROGRAMS/100 cm2
UNLESS OTHERWISE NOTED.

BMDL = BELOW METHOD DETECTION LIMIT

ECKENFELDER INC.

D. R. Davis

D. RICK DAVIS
VICE PRESIDENT/ANALYTICAL & TESTING SERVICES

APPENDIX C

ALTERNATIVE COST ESTIMATES FOR BUILDING INTERIOR MODIFICATIONS

TABLE C-1
Alternative 1 - Vacuum Building Interiors Cost Estimate
DICO Inc.
Des Moines, Iowa

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
1.0	LABOR:					
1.1	Project Manager	M.H.	80	120	9,600	Man hours for 3 weeks
1.2	Equipment Operator	M.H.	65	240	15,600	Man hours for 6 weeks, Level B PPE*
1.3	Foreman	M.H.	75	320	24,000	Man hours for 8 weeks, Level B PPE
1.4	4-Man Vacuum Crew	M.H.	65	960	62,400	Man hours for 6 weeks, Level B PPE
	total for 1.0				111,600	
2.0	EQUIPMENT:					
2.1	HEPA vac (dry)	day	121	30	3,630	Unit cost based on using 1 vacuum unit per day
2.5	Trailer & other equipment	day	150	40	6,000	
	total for 2.0				9,630	
3.0	WASTE DISPOSAL:					
3.1	Collected waste	drum	300	50	15,000	Based on incineration in Coffeyville, KS. (1000 mi.)
	total for 3.0				15,000	Assume one loaded truck is required for all waste

TABLE C-1 (cont'd)

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
4.0	ANALYTICAL:					
4.1	Analysis	wipe	70	536	37,520	Assumes 1 wipe per 500 sq. ft. - composite 3 wipes/sample
4.2	Disposal Profiles	L.S.	1000		1,000	
	subtotal for 4.0				38,520	
5.0	MOBILIZATION:	L.S.			36,369	Cost based on 30% of Labor and Equipment costs (items 1 and 2)
	sum of items 1.0 through 5.0				211,119	
6.0	ENGINEERING:	L.S.			50,000	Includes development of bid documents
7.0	CONSTR. OVERSIGHT:	L.S.			50,000	Includes full time construction observation, construction management, and contract administrative services.
8.0	ADMINISTRATIVE/ LEGAL:	L.S.			6,334	Cost based on 3% of sum of 1.0 through 5.0
9.0	CONTINGENCY	L.S.			42,224	Cost based on 20% of sum of items 1.0 through 5.0
	Total Project Cost:				359,676	

* Lower level of protection may be appropriate based on contractor pre-removal assessment of existing conditions.

TABLE C-2
Alternative 2-Vacuum and Wash Building Interiors Cost Estimate
DICO Inc.
Des Moines, Iowa

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
1.0	LABOR:					
1.1	Project Manager	M.H.	80	200	16,000	Man hours for 5 weeks
1.2	Equipment Operator	M.H.	65	400	26,000	Man hours for 10 weeks, Level B PPE*
1.3	Foreman	M.H.	75	480	36,000	Man hours for 12 weeks, Level B PPE
1.4	4-Man Crews (3 ea.)	M.H.	65	4,800	312,000	Man hours for 10 weeks, Level B PPE
	total for 1.0				390,000	
2.0	EQUIPMENT:					
2.1	HEPA vac (dry)	day	121	50	6,050	Unit cost based on using 1 vacuum unit per day
2.2	Vac-u-Max system (liquid)	day	110	50	5,500	Unit cost based on using 1 vacuum unit per day
2.3	HP Water laser	day	135	50	6,750	Unit cost based on using 1 power washing unit per day
2.4	Washing sol. treatmnt syst.	day	250	50	12,500	On-site treatment unit
2.5	Trailer & other equipment	day	150	50	7,500	
	total for 2.0				38,300	
3.0	WASTE DISPOSAL:					
3.1	Water Treatment waste	drum	410	10	4,100	Includes transportation and incineration in Coffeyville, KS.
3.2	Collected vacuum dust, PPE, etc.	drum	240	50	12,000	Includes transportation and incineration in Coffeyville, KS.
3.3	Pilot Program	L.S.	25,000		25,000	Includes pilot wash and wash water treatibility
	total for 3.0				41,100	Assume one loaded truck is required for all waste

TABLE C-2 (cont'd)

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
4.0	ANALYTICAL:					
4.1	Analysis	wipe	70	536	37,520	Assume 1 wipe per 500 sq. ft - composite 3 wipes/sample
4.2	Disposal Profiles	L.S.	1000		1,000	
	total for 4.0				38,520	
5.0	MOBILIZATION:	L.S.			128,490	Cost based on 30 % of Labor plus Equipment costs (items 1 and 2)
	sum of items 1.0 through 5.0				636,410	
6.0	ENGINEERING:	L.S.			60,000	
7.0	CONSTR. OVERSIGHT:	L.S.			65,000	Includes full time construction observation, construction management, and contract administrative services.
8.0	ADMINISTRATIVE/ LEGAL:	L.S.			19,092	Cost based on 3% of sum of 1.0 through 5.0
9.0	CONTINGENCY:	L.S.			127,282	Cost based on 20% of sum of items 1.0 through 5.0
	Total Project Cost:				907,784	

* Lower level of protection may be appropriate based on contractor pre-removal assessment of existing conditions.

TABLE C-3
Alternative 3 - Vacuum and Selectively Wash Building Interiors
Cost Estimate
DICO Inc.
Des Moines, Iowa

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
1.0	LABOR:					
1.1	Project Manager	M.H.	80	120	9,600	Man hours for 3 weeks
1.2	Equipment Operator	M.H.	65	240	15,600	Man hours for 6 weeks, Level B PPE*
1.3	Foreman	M.H.	75	320	24,000	Man hours for 8 weeks, Level B PPE
1.4	4-Man Vacuum Crew	M.H.	65	960	62,400	Man hours for 6 weeks, Level B PPE
1.5	2-Man wash Crew	M.H.	65	160	10,400	Man hours for 2 weeks, Level B PPE
	total for 1.0				122,000	
2.0	EQUIPMENT:					
2.1	HEPA vac (dry)	day	121	30	3,630	Unit cost based on using 1 vacuum unit per day
2.2	Vac-u-Max system (liquid)	day	110	10	1,100	Unit cost based on using 1 vacuum unit per day
2.3	Trailer & other equipment	day	150	40	6,000	
	total for 2.0				10,730	
3.0	WASTE DISPOSAL:					
3.1	Collected waste (solid)	drum	300	50	15,000	Includes transportation and incineration in Coffeyville, KS.
3.2	Collected waste (liquid)	drum	300	10	3,000	Includes transportation and incineration in Coffeyville, KS.
	total for 3.0				18,000	Assume one loaded truck is required for all waste

TABLE C-3 (cont'd)

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
4.0	ANALYTICAL:					
4.1	Analysis	wipe	70	536	37,520	Assume 1 wipe per 500 sq. ft - composite 3 wipes/sample
4.2	Disposal Profiles	L.S.	1000		1,000	
	total for 4.0				38,520	
5.0	MOBILIZATION:	L.S.			39,819	Cost based on 30 % of Labor plus Equipment costs (items 1 and 2)
	sum of items 1.0 through 5.0				229,069	
6.0	ENGINEERING:	L.S.			70,000	
7.0	CONSTR. OVERSIGHT:	L.S.			50,000	Includes full time construction observation, construction management, and contract administrative services.
8.0	ADMINISTRATIVE/ LEGAL:	L.S.			6,872	Cost based on 3% of sum of 1.0 through 5.0
9.0	CONTINGENCY:	L.S.			45,814	Cost based on 20% of sum of items 1.0 through 5.0
	Total Project Cost:				401,755	

* Lower level of protection may be appropriate based on contractor pre-removal assessment of existing conditions.

TABLE C-4
Liner Panel Installation Cost Estimate
DICO Inc.
Des Moines, Iowa

ITEM	DESCRIPTION	UNIT	UNIT COST ($)/UNIT	QUANTITY	TOTAL ($)	REMARKS
1.0	LINER PANEL INSTALLATION:					
1.1	Building Preparation	L.S.			7,000	Includes mechanical relocations
1.2	Liner Panel (floor to roof)	S.F.	1.40	5,610	7,854	Includes liner panel installed in Bldg. 3 and walkway between 2 & 3
1.3	Liner Panel Above Exist.	S.F.	1.45	20,900	30,305	Includes liner panel installed in Bldgs. 4, 5, and the west annex of Bldg 3
1.4	Panel Cuts & Opennings	L.S.			6,050	Based on 620 cuts and 15 opennings
	total for 1.0				51,209	
2.0	CEILING INSULATION REPAIR:					
2.1	Materials	L.S.			300	Includes fiber reinforced foil tape to patch damaged areas
2.2	Labor	M.H.	30.00	32	960	
	total for 2.0				1,260	
	sum of items 1.0 through 2.0				52,469	
3.0	ENGINEERING:	L.S.			20,000	
4.0	CONSTR. OVERSIGHT:	L.S.			41,700	Based on eight week project duration
4.0	ADMINISTRATIVE/ LEGAL:	L.S.			10,000	
5.0	CONTINGENCY:	L.S.			10,494	Cost based on 20% of sum of items 1.0 and 2.0
	Total Project Cost:				188,392	